INTERNATIONAL POLAR EXPEDITION.

REPORT

ON THE

PROCEEDINGS OF THE UNITED STATES EXPEDITION

TO

LADY FRANKLIN BAY, GRINNELL LAND,

BY

ADOLPHUS W. GREELY,
FIRST LIEUTENANT, FIFTH CAVALRY, ACTING SIGNAL OFFICER AND ASSISTANT, COMMANDING THE EXPEDITION.

VOLUME II.

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IN THE HOUSE OF REPRESENTATIVES, *June* 17, 1886.

Resolved by the House of Representatives (*the Senate concurring*), That 4,500 copies, with the necessary illustrations, be printed of the Report on the Proceedings of the International Polar Expedition to Lady Franklin Bay, Grinnell Land, by First Lieutenant A. W. Greely, Fifth Cavalry, United States Army, Acting Signal Officer; 1,250 copies of which shall be for use of the Senate, 2,500 copies for use of House, and 750 copies for distribution by the Signal Office to foreign libraries and Arctic explorers.

CONTENTS.

(VOLUME II.)

SCIENTIFIC APPENDICES.

ERRATA.

Page 28, between lines 5 and 6, insert heading, "HYPOTHETICAL LIST".

Page 28, line 6, "Urinator adamsii (Gray). Colymbus torquatus var. adamsii. Great Northern Diver" should read "Urinator imber (Gunn.) [=Colymbus torquatus.]".

Page 29 (in table), after "No. 2, Cepphus mandtii", the English name "Dovekie" should read "Mandt's Guillemot or Sea Pigeon".

Pages 30 and 34 (in table), after "No. 3, Cepphus mandtii", the English name "Dovekie" should read "Mandt's Guillemot or Sea Pigeon".

Page 50, line 18, and in Index, "Clione papillionacea" should be "Clione papilionacea".

Page 159, in list of stations, "Florberg" should be "Floeberg".

Page 170, line 6, "marked" should be "masked".

Page 170, line 10, "I. H. Lefroy" should be "J. H. Lefroy".

Page 174, line 16, "cracked" should be "cached".

Page 269, the headings "Meters per second" and "Miles per hour", under "Mean daily velocity" in last two columns, should be transposed.

Page 639, line 33, *for* "September 12, 188" *read* "September 12, 1881".

Page 686, last line, *for* "1887" read "1888".

CONTENTS.

(VOLUME II.)

SCIENTIFIC APPENDICES.

METEOROLOGICAL TABLES.

METEOROLOGICAL CHARTS.

TERRESTRIAL MAGNETISM.

MAGNETIC CHARTS.

TIDAL OBSERVATIONS.

TIDE CHARTS AND ILLUSTRATIONS.

PENDULUM OBSERVATIONS.

PENDULUM CHARTS.

ILLUSTRATIONS.

(Engraved by the Moss Engraving Company from photographs and sketches.)

NATURAL HISTORY (MAMMALIA).

APPENDIX 129.

By LIEUTENANT A. W. GREELY.

CARNIVORA.

No. 1. *Ursus maritimus* (Linn.). (Polar Bear.)

Examples of the polar bear are rare in Smith Sound north of Cape Sabine. Feilden, however, is probably mistaken in his own opinion that the white bear at the present day never enters the polar basin through Robeson Channel. Hayes saw tracks near Cape Frazer May 12, 1861. One was killed April 3, 1872, near Bessels Bay, and an old cranium was found by Markham in 1876, in the vicinity of Floeberg Beach. Fresh bear tracks were observed at Cape Hayes, August, 1875. In 1876 Archer saw tracks near Cape Lupton, March 29; and Coppinger May 12 in Newman Bay and May 28 in Petermann Fiord, and traces were also seen, May 23, near Cape Beechey.

In the spring of 1882, a bear traveling southward along the Grinnell Land coast disturbed our cache in Wrangel Bay, and in the following May two of them visited Sergeant Linn's party at Boat Camp, in Newman Bay. On October 2, 1882, a bear visited Fort Conger several times, but was not secured, although he was seen and pursued until he took to open water in Lady Franklin Bay. Lieutenant Lockwood, in May, 1882, noticed bear tracks (going northeast) on the north coast of Greenland, near Cape Benét, in 83° 03′ N., the highest latitude in which the animal has ever been known. Previously the most northern specimen was obtained by Parry north of Spitzbergen, in 82° 24′ N., July 14, 1827. Fresh bear tracks were seen in September and October, 1883, near Cape Sabine, coming from and returning in the direction of Bache Island, and again in March and April, 1884. One specimen, weighing 450 pounds, was secured April 12, and a second one chased May 19, 1884. The one killed July, 1881, near Cape York, weighed about 700 pounds. Captain Lyon mentions the bear killed July 21, 1821, weighing over 1,600 pounds, as very large; it measured from snout to insertion of tail 8 feet 9 inches [2.666^m]. Richardson mentions one 9 feet [2.743^m] long and 4.5 feet [1.371^m] high. Lamont mentions one in Nova Zembla 8 feet [2.438^m] long, 4.5 feet [1.371^m] high at the shoulders, which weighed at least 1,600 pounds, 400 being fat. With Feilden, I cannot understand why the bear ever leaves the rich hunting-fields of the "North Water" for the desolate shores to the northward. "In the stomach of a bear shot in Stor Fiord (Spitzbergen)," says Nordenskiöld, "during the expedition of 1864, there was found nothing but earth mixed with remains of plants." Nordenskiöld has elsewhere pointed out that the bear is at times a herbivorous animal, but vegetation and animal life are equally scanty to the northward from Cape Sabine.

NOTE.—No claim for originality of arrangement or great merit is made for these notes, which are simply such as might be expected from the observations and considerations of natural history matters by an observer untrained in such matters. It is to be regretted that there was no skilled naturalist with the expedition to collect and prepare satisfactorily data as to the habits and peculiarities of Arctic animals, but it is hoped that these notes may not be entirely devoid of interest to either laymen or scientists. Whatever is not the result of observation by the members of the Lady Franklin Expedition, or my own opinion, is so designated it is hoped as to be clearly apparent.

Sergeant Elison related that the two bears which visited the Boat Camp party May, 1882, in Newman Bay, slid down a steep snow slope for some distance on their hind quarters, as if for amusement. It seems that Nordenskiöld had observed similar behavior of the bear on North East Land in 1868. He says: "A polar bear was tracked, but made his escape, sliding down a steep slope of snow on his hind quarters, a mode of locomotion the animal seems to fancy."

The bear killed July, 1881, south of Cape York, was feeding on a young seal, and it is probable that the bear in Robeson Channel have moderate success, for a bearded seal killed May 27, 1882, had lost a flipper, evidently by a bear.

The bear meat eaten at Camp Clay gave no trouble to any one, but we avoided the use of the liver, which was used for shrimp bait. Our Eskimo shared the prevailing opinion that the liver is injurious. On this point Sir J. C. Ross says:

> "All that partook of it [bear meat] soon after complained of a violent headache, which with some * * was followed by the skin peeling off. * * On a former occasion, * * Sir Edward Parry's Polar Journey, having lived for several days wholly on two bears that were shot, the skin peeled off the feet, legs, and arms of many. It was then attributed rather to the *quantity* than the *quality* of the meat. The Eskimos eat its flesh, * * but the liver is always given to the dogs, and that may possibly be the noxious part."

No. 2. *Vulpes lagopus* (Linn.). (Arctic Fox.)

The Arctic fox is to be found in considerable numbers in the northern part of Grinnell Land, though only eight were obtained by us. He is much more wary and cunning than his brethren of the same species a few degrees of latitude to the south. It was very rare that a hunter could get within gunshot, and poisoned meat was so carefully rejected that, despite frequent baits, only one was obtained in that manner.

The activity of the fox in that region can hardly be questioned, as the animal or his fresh tracks have been recorded every month except February. He frequents the northernmost parts of Greenland and Grinnell Land. Lieutenant Aldrich, R. N., saw fox tracks near Ward Hunt Island, 83° 03′ N., and Lieutenant Lockwood observed numerous tracks at his farthest north on the Greenland coast, 83° 24′ N.

No summer specimen with even a bluish tinge was seen. April 7, 1882, a specimen obtained was white, except tip of tail. August 9, 1882, a specimen was observed at Cape Baird; a dirty white, with streaks of yellowish brown. October 31, 1882, a fox was seen on Bellot Island, with dirty yellowish-white fur. Jens trapped a fox November 19, 1882, which was pure white, except a few hairs on the end of the tail. A specimen caught a couple of weeks earlier had a faint yellowish tinge to his coat.

Their fur had a down-like appearance next the skin, and the odor of those in captivity was very faint and not especially disagreeable. One of the specimens was killed after a couple of months, as he was intractable, flew into a rage when approached, and could not be handled without biting seriously. I concluded him to be an old animal. The younger fox was easily tamed, but whenever taken up would try his teeth, though very gently, until assured of kind treatment. When caressed he gave out a purring sound, somewhat like a cat, which we thought to be a sign of pleasure.

Both animals were very cleanly and never were caught asleep, though for months an observer passed twice each hour through the place where they were confined. Whenever they received food they endeavored to conceal it, never eating it at once.

The young fox was made a pet, and was fed great quantities of food. He broke his chain, and digging into the snow wall cached his extra food there, and then declined further communication. He finally escaped in April, 1883, selecting a time doubtless when the dogs were asleep.

Feilden proved conclusively that this fox caches supplies for winter food. He says of a fox lair:

> "To our surprise we discovered numerous deposits of dead lemmings; in one hidden nook, under a rock, we pulled out a heap of over fifty. We disturbed numerous caches of twenty and thirty, * * * a small quantity of earth being placed over them. In one hollow we found the greater part of a hare hidden away. The wings of young brent geese were also lying about; * * * they must have been the results of successful frays of prior seasons, and * * * consequently the foxes occupy the same abodes from year to year. * * * Professor Newton had already suggested * * * that it laid up a store of provisions, and I was much pleased by thus being able to prove his theory correct."

Near Cape Sabine, in 1883–'84, we killed twenty-five foxes, of which five were of the white variety. They were obtained every month from October to February inclusive.

No. 3. *Vulpes lagopus fuliginosus* (Blue or Sooty Fox.)

There has been much dispute as to the identity of the blue fox as a separate species, but I have ventured to class it apart from the white variety and give it the designation used by Sir John Richardson, the famous Arctic naturalist.

Dr. R. Brown also says in the Arctic Manual: "There are two varieties—the blue and the white. This color is not dependent on the season." The last statement our experiences seem to confirm. Of twenty-five foxes obtained by us at and near Cape Sabine from October to February, twenty were blue. Of the twenty, two were slightly marked with white, indicating a mixed breed, but the eighteen were free from any sign or mark of white, yellow, or reddish, the hairs being of the same color to their very roots. The color was hardly blue, but rather a solid, unmixed slaty-gray, resembling very nearly the color of a pure Maltese cat, being perhaps a couple of shades deeper, toward the black. If the color was dependent on the season, the white foxes would have been caught in late winter, but three of the five white ones were caught in October, November, and December.

The hair of the white variety was, as Hayes has said, coarser than that of the blue, and occasionally yellowish hairs were found even in December. The skin of the white fox, as I observed, was not so tender as that of the blue. The hunters could tell a blue fox from a white one in the dark by its weight, the blue being invariably smaller than the white fox, and possibly the softness of the fur had some influence in the judgment; but no error was ever made in the twenty foxes which were shot in the darkness. The specimens at Sabine averaged three and a half pounds for the blue, and a pound more for the white variety.

Hayes at Port Foulke noted that the blue fox is smaller, weighing 4.5 pounds against 7 pounds for a large white specimen. It should be noted, however, that Sir James C. Ross, in Felix Boothia, found the blue variety—of which only three were obtained against fifty of pure white—to measure somewhat larger than the white variety. Perhaps these were selected foxes under the doctrine of the survival of the fittest, for Ross adds: "In a country which presents an unvaried white surface they [the blue foxes] must have extreme difficulty in surprising their prey, and be much more exposed to the persecutions of its enemies." Farther north, with less snow, their chances are better. It may be added, too, that Ross kept a pair of white foxes to watch the change of fur, which turned to brown through an ash, and not to blue.

Lamont appears to believe in two varieties, as he says there are eight blue to two white in Spitzbergen, but two blue to eight white in Nova Zembla.

Armstrong noted that on May 15, 1851, at Princess Royal Island, the white fox had partially assumed his brown summer garb.

In his "Siberia in Asia" Seebohm says of the Arctic fox:

"The Siberian merchants in Yenesaisk, as well as the Hudson Bay merchants in London, maintain the distinctness of the two forms, and attempt to prove their statements by producing both summer and winter skins of each. A possible explanation is that, like the stoat, the Arctic fox changes the color of its fur with the season throughout the greater part of its range; but towards the northern limit of its distribution the summers are so short that it is not worth while for it to turn dark, whilst towards the southern limit of its range snow does not lie long enough on the ground to make the whiteness of the fur protective. My impression is, however, that the blue fox is a variety of the Arctic fox, bearing somewhat the same relation to the latter form as the black fox does to the red fox. It is difficult to explain otherwise the facts that skins of blue fox are obtained very far north, and those obtained in winter have very glossy, long, and thick hair."

The facts here presented show that north as far south as the seventieth parallel the blue fox is found, while at Cape Baird, in 81° 32′ N., the white fox became a dirty white, streaked with yellow and brown.

No. 4. *Canis lupus*. (Wolf.)

The wolf or his fresh tracks have been seen, or his howling heard, in Grinnell Land every winter month except November. One was seen October 30, 1882, and another February 10, 1882. They were twice heard howling near Dutch Island in December, and tracks were observed January 29, 1882. In Boothia Felix a wolf was seen December 30, 1829.

The wolf has never been known in Greenland, except two examples. One of these was observed at Thank God Harbor April 1, 1872. Tracks a few days old had been previously seen in that locality February 4, 1872. The most northerly specimen known is undoubtedly the animal whose tracks were observed, April 15, 1876, by Markham, near Cape Joseph Henry, 82° 50′ N.

A band of eighteen crossed the harbor-floe within several hundred yards of Fort Conger September 15, 1881. In the summer of 1883 a band of about a dozen was seen passing near the station. They stopped for a while and howled dismally and in concert, but discreetly remained out of gunshot.

The Eskimo dogs whenever wolves were near exhibited signs of uneasiness if not of timidity, much the same as did those of Ross in Boothia Felix, who began to tremble and howl whenever they became aware of a wolf's approach.

No. 5. *Mustela erminea* (Linn.). (Ermine.)

The ermine was obtained by Feilden as far north as 82° 30′. Its activity throughout the winter is undoubted, as tracks were seen as early as February 19, 1876, at Floeberg Beach, and at Fort Conger as late as December 22, 1882. One wintered in our pile of commissary stores, and its tracks were seen occasionally until March 3, 1883, when it was shot. Its coat at that time was in winter fur, as had been a specimen shot on September 29, 1882. It was entirely white except the end of the tail and a few of the anterior whiskers, which were black. One would infer from this that the animal does not assume a summer coat in Grinnell Land, but a beautiful specimen in summer costume was seen by me near Distant Cape June 25, 1883. The greater part of the tail was then brownish black, the upper portion of the body chocolate or dark brown, with occasional black hairs, the whole giving an impression of chestnut. A portion of the animal, particularly the belly and the posterior part of the tail, was of a bright primrose-yellow tinge. The animal was on a ledge of rocks not more than ten or twelve feet [3 or 3.65^{m}] distant. It showed no signs of fear, and while I was observing it closely watched me and gave utterance to shrill, chattering cries, which seemed to indicate curiosity rather than fear. Unfortunately I was unarmed, and could not obtain it.

Feilden has pointed out that the limits of the ermine, in Greenland and Grinnell Land, correspond with those of the lemming on which it feeds.

On August 31, 1853, an ermine in summer dress was observed in Northumberland Sound, 76° 52′ N.

In Boothia Felix the ermine, Ross says, "assumes its winter dress early in September, and changes to brown towards the end of May."

Seebohm says that this animal is white in cold climes, except the tip of its tail. "In cold winters it regularly assumes its white dress in Scotland and in England, as far south as the Derbyshire moors."

RODENTIA.

No. 6. *Myodes torquatus* (Pall.). (Hudson Bay Lemming.)

Major Feilden has pointed out that the ringed lemming was found in great numbers in Grinnell Land to its extreme northern point, in latitude 83° N., and to the extreme western point reached by Aldrich.

This lemming was first noted in Smith Sound by Dr. Bessels, in 1871. It had previously been found by Captain Scoresby, in 1822, on the eastern coast of Greenland.

The opinion put forward by Feilden, that the migration to the east coast was around the northern shores of Greenland, is further confirmed by the observations of Lieutenant Lockwood, who found traces of this little animal on the north coast of Greenland as far as he went, to 83° 24′ N., 40° 46′ W., and a specimen was obtained at Mary Murray Island, 83° 19′ N.

Sir John Ross found, during Parry's remarkable boat journey of 1827, on a floe sixty miles north of Spitzbergen, a skeleton of this species, which probably came from the Greenland coast.

The marked tendency of the lemming to wander in all directions is incidentally the strongest proof that the inland ice, of which the great Humboldt glacier is an offshoot, extends nearly across Greenland in that latitude, as Nordenskiöld found it to do five hundred miles farther to the south. This is evidenced by the fact that, although for over sixty years a habitant of North Greenland, this lemming was not found by Kane, Hayes, or Bessels, who successively have explored the Greenland coast from Cape York to Humboldt Glacier, and it is unknown to the "Arctic Highlanders."

The certainty of its being a regular habitant in Grinnell Land, and not migratory, is beyond doubt. Tracks were seen at Floeberg Beach as early as February 11, 1876, and fourteen days later one was caught in its winter coat. Frequent tracks of the lemming were seen at intervals by us at Fort Conger (Discovery Harbor) during the entire winter of 1881–'82.

The first lemming was caught March 23, 1882. Its fur was tipped with white, which gave it a peculiar pepper-and-salt appearance. One caught at Floeberg Beach, May 22, 1876, was however in its summer clothing of dark fur. Captain Lyon, in speaking of a lemming of mouse color at Winter Island, June 25, 1822, says that all seen at Melville Island, 1819–'20, were white.

For some unknown cause, comparatively few were seen in the vicinity of Discovery Harbor from 1881 to 1883. Murdock reports that at Point Barrow they were very rare 1881–'82, but abundant in 1883.

Feilden has shown that the extraordinary development of the claws of the forefeet is seasonal, and that in late summer the claws are pointed and worn down to ordinary size. Our observations confirm his statement that the animal does not hibernate, and that it principally feeds on the buds of the *Saxifraga oppositifolia.*

Many comfortable nests made by the lemming were found by us, being invariably of grass. Such of their holes as I examined had two entrances to their nests, the openings being at a considerable distance apart so that the animal could use either in case of danger.

Sir Edward Belcher reports that peat gathered on the shores of Wellington Channel, when thawed in his cabin, was found to be "composed, to a depth of nine inches [228.6^{mm}], almost entirely of the remains of lemmings. * * * The history of the lemming is of itself * * * one of great interest, and the allusions to 'armies' of these field mice must be extended even to these regions, for nothing short of such myriads could have produced beds of exuviæ nine inches [228.6^{mm}] in thickness. They are still numerous here."

No. 7. *Lepus glacialis* (Leach). (Polar Hare.)

The English Expedition of 1875 found the polar hare at the northern extremity of Grinnell Land, and on May 17, 1876, its footprints were seen by Markham on the frozen polar sea, in 83° 10′ N., fully ten miles from land. Lieutenant Lockwood killed a hare on the North Greenland coast at Cape Benét, about 83° 03′ N., the most northerly specimen ever obtained. Tracks were seen at Mary Murray Island, 83° 19′ N., and at Lockwood Island, 83° 24′ N.

At Floeberg Beach hare tracks were seen February 11, 1876, and a specimen shot eight days later. Tracks were seen by us as early as February 6, and as late as December 22, 1882—strong, if not convincing, proofs that the animal does not hibernate. We saw several burrows in the snow, which had been temporarily occupied by hares, resembling that found by Feilden in February, 1876. The earliest hare killed in the year by us was on February 15, 1882. It weighed eleven pounds, and its fur was pure white except a few perfectly black hairs at the tip of the ears. The specimen was in exceedingly good condition, showing that it had experienced no difficulty in obtaining proper food during a winter of unprecedented severity. It had been feeding on willow and saxifrage buds, similar to the one killed by Dr. Moss, February 19, 1876, at Floeberg Beach.

I observed carefully the fur of quite a number of examples, both summer and winter, and found it invariably white in adults not only along the coast, but also in the interior of Grinnell Land. I thought it possible that the summer coating of the inland hare might resemble the grayish-brown color found in midsummer by Captain Sabine in the specimens killed on Melville Island. It is barely possible that the specimens referred to by Sabine were the young, for a hare caught in Wellington Channel July 21, 1853, was entirely white except the black tips to the ears. A young hare about two months old, caught in a valley near Lake Hazen, June, 1882, had mouse-colored (slaty-gray) spots on flanks and breast, and its ears were tipped with the same color.

The only difference between the white and summer furs in Grinnell Land, as far as I could see, was a loss in summer of a considerable portion of the fine swan-down fur which underlies the longer coarser hair.

In Boothia Felix, 70° N., the hare however changes the color of his coating yearly, for Ross speaks of them in summer fur June 10, 1830, and July 21, 1831. In 1829 they were quite white by October 2, and in 1832 were still in winter coat June 7. The largest specimen obtained weighed eleven pounds. The largest killed by the *Resolute*, March 22, 1853, was ten pounds. It is to be remarked that both of these hares were killed at the end of the winter, when one naturally expects they would be in poor condition. The average weight of those obtained in Bank's Land was seven pounds, as Sir Alexander Armstrong records. Those obtained by H. M. S. *Resolute*, 1852-'53, near Dealy Island, averaged eight pounds.

The difficulty mentioned by Dr. Richardson, of skinning the hare in winter fur without tearing it, was not experienced by us. The skin pulled off, without particular care, whole and unbroken.

Ross mentions a young male hare in Boothia Felix which assumed its winter coat in captivity the same time as the wild ones, and that the ensuing May its winter coat when cast was "replaced by a pure white fur, from which it is probable that the old males are not subject to the same changes as the females in summer."

It thus may be possible that the old polar hares do not change the color ot their fur in very high latitudes and that those referred to by Captain Sabine, at Melville Island, were young.

RUMINANTIA.

No. 8. *Ovibos moschatus* (Zimm.). (Musk-ox.)

A portion of the Barren Lands of British America, the Parry Archipelago, and other lands to the northward of the continent are the only regions now occupied by this interesting species. No traces of the animal has been found in Southern Greenland, though it abounds in the eastern and northern coasts. The existence of the musk-ox in Greenland and Grinnell Land, with but little doubt, resulted by migration from the American continent northward over the adjacent islands and their intervening frozen straits. Scarcely one of these islands has been visited where the remains of the musk-ox have not been found. At one time Smith Sound must have been crossed by these animals, as about twenty skulls have been found in Inglefield Land, north of the seventy-eighth parallel. That the species never reached Danish Greenland is confirmatory evidence that the island ice, part of which flows into Kane Sea, as the Humboldt Glacier, likewise debouches by discharging glaciers into Melville Bay. To this extent I differ from Feilden, who inclines to the opinion that the musk-ox reached Inglefield Land southward from Washington Land. Not only the opinion that there is little more difficulty in crossing Smith Sound in a favorable spring than Robeson Channel, causes this belief, but my experience regarding the remains in Grinnell Land. But few skulls were found by me in the interior; and, with one exception, they failed to show great age, thus indicating a comparatively modern migration. On the other hand, the remains of musk-oxen, near Humboldt Glacier and Foulke Fiord, show signs of great age.

Although I found recent traces of musk-oxen within less than thirty miles of the head of Greely Fiord, yet I agree with Feilden that they followed the east shore of Grinnell Land in their journey northward. Feilden reports abundant and recent traces of the animals in Alexandra Harbor, Buchanan Strait, August, 1875. The dung of the musk-ox was discovered by us at Cape Hawks, Rawlings and Carl Ritter Bays, and a specimen was killed by Sergeant Brainard, November, 1882, not far above the latter bay. Sergeant Brainard discovered fresh tracks at Thank God Harbor in March, 1882, and Lieutenant Lockwood likewise at Cape Britannia, 82° 44′ N., and at Cape Benét, 83° 03′ N., in May, 1882. This not only proves that the species was not exterminated in Northern Greenland, but renders it very probable that the musk-oxen of Koldeway originally reached the east coast through Nordenskiöld, Victoria, Nares, or possibly Sherard Osborn Fiord and the connecting valley. Siemens, one of the *Polaris* crew, wrote:

> "The musk-oxen came (in 1872) in a northeasterly direction from East Greenland. All those that were killed were met in the same vicinity, on a plateau which trended from the north side of Newman Bay, easterly between the mountains."

I have elsewhere referred to my belief that the northern limit of the inland ice is to the south of those fiords, and that the character of the country is like the interior of Grinnell Land. To the northward repeated inlets exist, increasing greatly the difficulty of the animals passing around Greenland. I am thoroughly satisfied of the natural disinclination of the musk-ox to cross the ice, both from observation of our musk-calves, who could not be driven on it, and from the tracks of adults, which followed carefully in places the longer, rough, rugged shore of Ruggles River rather than cross snow-covered ice by a shorter route. This migration to the east coast must have been a modern one, certainly within the present century.

This opinion militates against the necessity of further advancing the idea that "Greenland must end not far north of latitude 82° or 83°."

As to Grinnell Land, observations show that instead of the range of the musk-ox being confined to the coast-line and debouching valleys, he is found feeding and wandering in the whole fertile belt between Archer and Greely Fiords, and from Chandler Fiord to the head of Very Valley.

Feilden has described the ovine character of this species. In addition I might say that when in numbers they generally form a circle, with young cows and calves in the center, and that much bellowing and threatening attitudes followed, but they were never found dangerous.

The musk-ox was found in small herds from four to twenty in number. Occasionally one or two animals only were together, but with rare exceptions these stray animals proved to be bulls which probably had been driven from large herds.

The senses of smell, sight, and hearing, which are said to be very acute, could not be accurately judged by us. It was uncommon that a herd was not readily approached, but such fact would not necessarily indicate lack of perception, but might easily result from indifference or a sense of perfect security in their great bulk and strength. On one occasion, after killing several, the hunters had some trouble in keeping the rest of the herd away from the camp.

My own discoveries settled a number of questions that puzzled Feilden, and we know that not far from two hundred musk-oxen are now habitants of Grinnell Land, fed by abundant vegetation. Willow, saxifrage, *dryas*, and grasses form winter as well as summer food. I found large beds of willow that had been fed on during April, the musk-oxen having broken the crust and scraped off snow to reach it. This was doubtless a favorite pasture-ground, as plenty of saxifrage and scanty grass was in the same section. I observed musk-oxen scraping the snow from grass, saxifrage, and *dryas* in early autumn, using hoofs for the purpose. The animal, as all Arctic mammals must, quenches its thirst by snow. It was surprising that the open river discovered by me in April, 1882, showed no track of visiting cattle, although we saw many within a few miles of it. I suppose not less than fifty herds or solitary animals were observed feeding, and none were ever seen eating lichens. The most fertile lichen grounds showed no signs of the animal. Feilden found only willows and grasses in stomachs examined by him.

It appears more than probable that the animal ekes out its scanty winter food (which in darkness must be gathered under extraordinary disadvantages) by its fat. The rapidity with which Arctic animals (among whom the musk-ox is not an exception) acquire fat is well illustrated by the experience of the Swedes in Spitzbergen during 1861. Nordenskiöld says: "The Swedes could hardly believe (them) to be the same species of animals (reindeer) as those they had shot at Treurenberg Bay scarcely four weeks before. Then they were so lean, as if they had consisted entirely of skin, bone, and sinew; these, on the contrary, might have competed as fat stock at an English cattle show, for the largest reindeer had a layer of fat four or five inches (162 or 127^{mm}] thick on the loin."

Ten specimens killed the autumn of 1882 averaged 360 pounds of dressed meat, while two killed the following spring weighed 260 pounds each, less by far than any of the ten. The largest, which was about 1,200 gross, dressed 432 pounds.

The musky odor, I believe, will not be communicated to the meat if the animal is entirely dressed as soon as killed. A bull emitting a very marked odor when killed was dressed immediately, and showed no taint when eaten months afterward.

No. 9. *Rangifer tarandus* (Linn.). (Reindeer.)

The reindeer, formerly a habitant of Northern Grinnell Land, evidently retreated southward many years since.

Lieutenant Gifford, R. N., May 19, 1876, picked up an antler in 82° 45′ N., and horns were found at Thank God Harbor by members of the Polaris Expedition in June, 1872. Probably a dozen antlers were gathered by us in the vicinity of Fort Conger, and as many more in the interior of Grinnell Land in the valleys near Lake Hazen, but no traces of a living animal were found. Much to my surprise, I picked up a reindeer-skin, about an inch square and apparently not very old, in a valley to the westward of Lake Hazen.

It is more than probable that a herd yet exists in the vicinity of Rawlings Bay. The vegetation of the country adjacent to that point resembles in a marked degree that around Discovery Harbor, and was the most luxuriant observed by me north of Upernivik. Feilden found a reindeer skeleton, recently picked by wolves, on the shores of Rawlings Bay in the neighborhood of Radmore Harbor, 80° 27′ N. Sergeant Brainard, August, 1883, found, five miles or more north of Cape Lawrence—about 80° 28′ N.—a freshly picked skeleton of a young fawn. Eskimo Christiansen, who was with Brainard, said the animal could not have been dead more than two years. In Twin Glacier Valley, near Alexandra Harbor, Buchanan Strait, newly-shed horns were found by Nares in 1875; but the animal is not a regular habitant of that valley, as was proved by Sergeant Long's fruitless journey to that point in March, 1884.

PINNIPEDIA.

No. 10. *Phoca fœtida* (*or hispida*) (Fab.). (Fiord Seal.)

This seal is known as the fiord seal, or by the English whalers as the "floe-rat." Our own experiences bear out Feilden's, who says: "It was the only species seen north of Cape Union, and which penetrates into the polar sea." There is no doubt of the seal wintering in Robeson Channel, although how the animal obtains breathing spaces is extremely doubtful, for in all the autumn and spring travel no hole was even seen until the early days of April.

During July and August this seal is very plentiful near Fort Conger, and at least two hundred must have been observed in all, as many as thirty or forty in a single day near Cape Baird. This variety was seen in the "fire-hole" by Stephenson, at Discovery Harbor, several times in January and February, 1876. A small specimen, weighing 50 pounds, was also killed by us in the water-hole, December, 1882. The seal had evidently visited the tidal-hole quite regularly. In April, 1883, I found near the tidal-crack at Fort Conger a cylindrical hole about a foot [.3^m] in diameter, which the Eskimo declared to be the breathing hole of one of this species. The ice at that point was nearly seven feet [about 2^m] thick at the end of the winter. This species was also killed at an early date near the head of Archer Fiord, and was seen by Lieutenant Lockwood in Greely Fiord. It was also observed in the polar ocean by Lieutenant Lockwood near Cape Stanton, April, 1883, and by Dr. Pavy north of Cape Joseph Henry about 82° 54′ N., April, 1882. This species was seen by Parry, in 1827, to the north of Spitzbergen as far as 82° 45′ N. At Princess Royal Island December 28, 1850, a seal was seen in the fire-hole.

No. 11. *Phoca grænlandica* (Müll.). (Saddle-back Seal.)

This seal has not been before noted in Smith Sound, except by Bessels, though there is no apparent reason why its range should not extend in this direction, as it is found in the Greenland and Kara seas, and was occasionally seen north of Spitzbergen by Parry in 1827.

The most northern specimen observed by us was shot at, but not secured, 6 miles north of Hans Island, about 81° 30′ N., August 10, 1881. The entire crew of the *Proteus* were thoroughly familiar with this variety, and there was no possible chance of mistake in its identity, as the seal was near by and in sight for a considerable time.

It is evident that this species does not go into Smith Sound in large numbers during its remarkable migratory absence from its usual haunts, as none were seen at Cape Sabine during our year there.

No. 12. *Phoca barbata* (Fab.). (Bearded Seal.)

This seal has been previously obtained in Thank God Harbor and Discovery Bay. The experience of Bessels and of my own party leave no doubt that it winters in Robeson Channel. One was shot as late as November 4 in 1871, and as early as March 18, 1872. A seal-hole was discovered by us near Distant Cape, in April, 1883, which had certainly been open for some time. Five were obtained near Distant Cape in May, 1882; seal-holes were first observed on the 15th of that month, and a seal two days later. The most northerly specimen seen was near Cape Murchison, about 81° 46′ N., at the entrance of St. Patrick Bay. The largest seal obtained by us weighed 640 pounds, and was eight feet two and a half inches [2.5^m] in length. One obtained at Thank God Harbor by the *Polaris* party was estimated at fifteen hundred weight, which would seem to be rather large, as seven obtained by us although averaging 7 feet 11 inches [2.412^m] in length weighed but 530 pounds. Feilden mentions a bearded seal weighing 510 pounds, killed in Dobbin Bay, which had a Greenland harpoon head in the blubber on its back.

No. 13. *Trichechus rosmarus* (Linn.). (Walrus.)

The walrus was seen by Nares' expedition 1875–'76, as far north as Cape Frazer, and was obtained in the vicinity of Norman Lockyer Island. The most northerly specimen observed by us was August, 1883, about ten miles south of Cape Hawks. The difficulty of killing this animal without lance and line was illustrated to our misfortune in Baird Inlet during October, 1883. Private Long and Eskimo Christiansen, from a distance of a few yards, put two bullets into the vital parts of a walrus. Blood poured from the animal in torrents, but he was able to reach the edge of the floe and roll into the water. A few days later Private Long killed a walrus in the water, which floated three or four minutes only. Baird Inlet appeared to be a favorite feeding-ground for these animals.

In May, 1883, Lieutenant Lockwood and his party saw in open water, near the head of Greely Fiord, what was thought to be a walrus, Sergeant Brainard and Eskimo Christiansen inclining to the same opinion. From a distance they were unable to determine positively, although it was examined through the glass. Private Ellis claimed to have seen a walrus a hundred yards [91^m] distant off Distant Cape, 81° 45′ N., July, 1882. Frequent examples of the walrus were seen between Cape Hawks and Sabine in September, 1883.

As bearing on the probability of walrus in Greely Fiord it should be remembered that walrus in Wellington Channel were not uncommon. Admiral Sir George H. Richards saw three on March 23, 1853. At Exmouth Island 77° 15′ N., less than 200 miles south of Cape Lockwood, two walrus were observed September 3, 1852.

As to the walrus being carnivorous our observations are defective. Dr. Robert Brown has no doubt on the subject. Captain Hooper, U. S. R. M., says that Capt. F. E. Nye, the veteran whaler, who was lost in the *Mount Wollaston*, wrote him that the walrus eat both fish and seal. Captain De Long records that a walrus which was killed by one of the crew of the *Jeannette* in April, 1880, was found by him to have part of a young seal in his stomach.

No. 14. *Cystophora cristata* (Nills.). (Bladder-nose Seal.)

A bladder-nose seal was killed by us in the middle of Kane Sea, about 79° 10′ N., September 20, 1883. One or two other seals of this species were also seen in about the same place. The animal killed weighed probably over 600 pounds, as it was in good condition, and measured 8 feet 4½ inches [2.252^{m}] in length.

CETACEA.

No. 15. *Balæna mysticetus* (Linn.). (Right or Common Whale.)

Lieutenant Egerton, R. N., found in 1876, a part of the rib of a Greenland whale near Floeberg Beach in 82° 33′ N. A rib was also found August, 1875, on Norman Lockyer Island. Feilden was unwilling to give an opinion which would account for its presence, but is satisfied that no whale at the present day could inhabit Lincoln Sea.

No Greenland whales were seen by us north of Cape York. A rib, presumably of a Greenland whale, was, however, found by Lieutenant Lockwood near the head of Archer Fiord, in August, 1882; and Sergeant Brainard saw what he thought to be the rib of a whale to the northeast of Cape Sabine, in front of the glacier where shrimping was done in the winter of 1883–'84. Probably, when the land North of Sabine was of a thousand feet [305^{m}] lower elevation, and these inland seas correspondingly larger, the Greenland whale frequented these northern waters.

May 11, 1853, bones of a very large whale were found at an elevation of 500 feet [152^{m}] above the sea on Princess Royal Island, 76° 44′ N., 92° W.

No. 16. *Orca gladiator* (Bonn.). (Killer or Sword[illegible]

This grampus, or swordfish, was observed just north of [illegible]e Lieber, 81° 35′ N., August 5, 1881, by the mate of the *Proteus*, who claimed familiarity with it. It was apparently in pursuit of a school of white whales.

No. 17. *Beluga catodon* (Linn.). (White Whale.)

The white whale had not been seen in Smith Sound prior to the example observed by us on August 5, 1881, north of Cape Lieber, about 81° 35′ N. There was some question as to the fact, but I saw no reason to doubt the accuracy of the statements of several of the crew of the *Proteus*, who knew the animal, the more particularly so as a school of narwhals was seen at the time, and it has been generally accepted that the range of the narwhal and the white whale are the same. My own observations agreed with those generally of the party, that both narwhals and white whales were seen. Parry, in 1827, saw white whales still farther north, near the edge of the pack, in 81° 40′ N., on the Spitzbergen meridian. A white whale was seen several miles north of Cape Sabine, April 13, by Eskimo Jens, and a school of them going south, May 9 and 10, 1884, by Sergeant Frederick.

Hayes records that there were great numbers of white whales in schools August, 1861, between Gale Point and Whale Sound. The retreating party under Lieutenant Garlington found a stranded white whale on the shoals of Pandora Harbor, but a short distance south of Cape Sabine, July, 1884. Dr. McCormick reports white whales going south in Wellington Channel, 1852.

No. 18. *Monodon monoceros* (Linn.). (Narwhal or Unicorn.)

The narwhal was seen near Cape Sabine in August, 1875. The range of the narwhal to the northward of Smith Sound undoubtedly depends upon the freedom of Kane Sea and Kennedy Channel from ice. There

seems no doubt that at times this animal even reaches the polar sea to the northward of Grinnell Land, as a horn was picked up near Floeberg Beach, in 82° 27′ N., by Lieutenant Parr. On August 5, 1881, a school of narwhals was seen by us in Hall Basin to the northward of Cape Lieber, and one of them was struck with a lance by one of the Eskimo, but escaped. A considerable number of them were observed on two occasions later in the same place. They were seen again during our retreat in August, near Cape Cracroft, about 81° 20′ N., and in September, 1883, off Bache Island. Hayes also saw them August, 1861, between Gale Point and Whale Sound.

Distribution of Mammalia in, and northward of, Kennedy Channel.

Highest latitude reached.	Species.	Common name.	North of 81°. Migratory.	North of 81°. Indigenous and present all the year.	Remarks.
83° 03′	Ursus maritimus	Polar bear	Yes		
83° 24′	Vulpes lagopus*	Arctic fox		Yes	
82° 50′	Canis lupus	Wolf		Yes	
82° 30′	Mustela erminea	Ermine		Yes	
83° 24′	Myodes torquatus	Hudson Bay lemming		Yes	
83° 24′	Lepus glacialis	Polar hare		Yes	
83° 03′	Ovibos moschatus	Musk-ox		Yes	Traces at Cape Benét.
82° 45′	Rangifer tarandus	Reindeer			Probably habitants near Radmore Harbor, 80° 27′ N. Antlers found to 82° 45′ N.
82° 58′	Phoca fœtida	Floe-rat or Fiord seal		Yes	
81° 30′	Phoca grœnlandica	Saddle-back seal	Yes		
81° 46′	Phoca barbata	Bearded seal		Yes	
79° 40′	Trichechus rosmarus	Walrus	(?)		Probably around Bache Island the most of the year.
79° 15′	Cystophora cristata	Bladder-nose seal	(?)		Probably around Bache Island the most of the year.
	Balæna mysticetus	Right whale			Rib found in 82° 33′. Probably this whale in the present day goes to about 75° N.
81° 35′	Orca gladiator	Killer or sword-fish	Yes†		
81° 35′	Beluga catodon	White whale	Yes†		
81° 35′	Monodon monoceros	Narwhal or unicorn	Yes†		

* The blue fox, *V. lagopus fuliginosus*, not seen north of 78° 55′ N.

† In favorable and exceptional years.

BOTANY.

Appendix No. 130.

By Lieut. A. W. Greely.

The botanical collection of the Lady Franklin Bay Expedition was made under many disadvantages, as there was no officer able to identify more than half a dozen species of Arctic plants. Great care and attention was paid by me personally to this work the second year, and as a result over sixty specimens were brought back, several of which escaped the observation of the trained naturalist of the British expedition of 1875–'76. The specimens brought back have been kindly identified by Professors Asa Gray and S. Watson, of Harvard University, and Dr. George Vasey, of the Agricultural Department. The appended remarks are drawn almost entirely from my private journal.

The existence of any vegetation at so high a latitude, within seven or eight degrees of the geographical pole, is in a measure surprising, but the luxuriance of growth evidenced by many of the specimens, was a source of wonderment to all. In the valley of Very River, in the interior of Grinnell Land, grasses from 16 to 24 inches [406 to 609^{mm}] tall were seen by me in considerable quantities, and even from the sea-coast specimens of over twelve inches [305^{mm}] were not infrequent.

The most marked peculiarity of the Grinnell Land plants has not, as far as I am aware, been commented on. I refer to the unusually early date on which they bloom. On June 1, 1882, in latitude 81° 44′ N., the purple saxifrage (*Saxifraga oppositifolia*) was found in full blossom; and other flowers followed with such rapidity that by June 21 nearly twenty specimens were in bloom. Careful observation in 1883 proved that 1882 was not more than a couple of days in advance of it, and the scanty observations of the *Polaris* expedition show that on the east side of Hall Basin the flora matures with equal rapidity.

The following notes collated from various sources, give an idea of how early a date June 1 is for the flowering of Arctic plants. The first flower, unless otherwise noted, was the hardy and almost universal purple saxifrage (*Saxifraga oppositifolia*), Winter Harbor, Melville Island, July 9, 1820; north side of Melville Island nearly a degree farther north, one day earlier, June 8, 1820; Winter Island, 67° 11′ N., June 9, 1822; near Igloolik, 69° 16′ N., June 15, 1823; Fort Reliance, 62° 46′ N., "only one flower in bloom," July 7, 1834; near Felix Harbor, 69° 49′ N., June 12, 1830; Van Rensselaer Harbor, 78° 37′ N. (*Andromeda*), June 11, 1854; Assistance Bay, 77° N., June 26, 1854; Mussell Bay, 79° N., June 6, 1827; June 14, 1873; Treurenberg Bay, 79° 57′ N., June 22, 1861; Wahlenberg Bay, 79° 46′ N., June 15, 1873; near View Point, Grinnell Land, 82° 45′ N., June 6, 1876; Thank God Harbor, 81° 38′ N., June 3, 1872; Cape Szerdze Kamen, 66° N. (*Cochlearia fenestrata*), June 23, 1879; Camp Clay, 78° 54′ N., May 24, 1884; Sabine Island, East Greenland, 74° 32′ N., June 4, 1870.

The rapid development of flowers in high latitudes in a great measure depends on the fact that the sun remains continuously above the horizon, and the heat from the sun, which observations show to be so great, is also continuous at the more northerly stations. Another peculiarity lay in the fact that scarcely any plant was confined to a special level, but seemed to grow as readily at great heights as near the level of the sea. Nordenskiöld has well said on this point in other Arctic localities: "It is quite remarkable that the vegeta-

tion diminishes quite inconsiderably with the height above the sea, so that nearly all the plants that grow near the beach thrive as well at a height of 2,000 feet [610^{m}]. The continual sunlight and the insignificant difference in temperature are undoubtedly the causes of this."

Comments on the elevation, locality, flowering, &c., at Fort Conger have been occasionally supplemented with data collected from various sources relative to other localities.

FLOWERING PLANTS.

Plants collected in the summers of 1882 and 1883, by Lieut. A. W. Greely and members of the Lady Franklin Bay Expedition, in the vicinity of Fort Conger, Grinnell Land, situated in lat. 81° 44′ N., long. 64° 45′ W.

No. 1. *Ranunculus nivalis*, R. Br.; var. *sulphureus*, Wahl. In bloom June 17, 1883; grows from the sea-level to 1,800 feet [549^{m}] altitude, on loamy or swampy soil; did best among mosses and ferns; the largest specimen preserved was 6¾ inches [171^{mm}] high, but some were 9 inches [229^{mm}].

At Brandywine Bay, Spitzbergen, on June 26, 1861, Nordenskiöld found this plant very luxuriant, "up to the knees."

No. 2. *Ranunculus affinis*, R. Br. In bloom June 19, 1883; on moist loamy ground; not found at a less elevation than 1,800 feet [549^{m}]; specimens about 5 inches [127^{mm}] high.

No. 3. *Papaver nudicaule*, L. In bud June 12, and in flower June 17, 1883; grew from sea to 1,900 feet [579^{m}] altitude; found on all soils, but did best on hard, dry, clayey soil; color of flower varied from deep saffron to a yellowish white; in some specimens no color except very faint yellow at very center.

This flower was found by Sergeant Brainard at Lockwood Island, 83° 24′ N. The specimens brought back were of good size. Found blooming at an elevation of 1,500 feet [457^{m}] at Brandywine Bay, Spitzbergen, July 26, 1861. Captain Markham found it in flower June 20, 1879, at Matyushin Shar, Nova Zembla.

No. 4. *Draba alpina*, Linn. In flower June 16, 1883. At Winter Island, 67° 11′ N., in bloom about June 29, 1822.

No. 5. *Draba borealis*, D. C. In flower June 16, 1883; 2 to 4 inches [50 to 101^{mm}] high.

No. 6. *Draba hirta*, L., Jacq.; *D. arctica*, Vahl. Specimens 2 to 3 inches [50 to 76^{mm}] high.

No. 7. *Draba rupestris*, R. Br.

No. 8. *Vesicaria arctica*, Richards. In bloom June 13, 1883; found from seacoast to 1,000 feet [305^{m}] altitude; grew generally on granitic or stiff clay, doing best on the latter soil; roots very long and deep; the largest specimen 4 inches [101^{mm}] high, and spreading 6 or 7 inches [152 or 178^{mm}] wide.

No. 9. *Cochlearia officinalis* (?); *C. fenestrata*, R. Br. From sea-level to 100 feet [30^{m}] altitude; found generally along moist shores of brooks; specimens from 1 to 4 inches [25 to 101^{mm}] high. In flower June 11, 1882.

On June 11, 1861, in Treurenberg Bay, 79° 57′ N., *C. fenestrata* began to open its buds, and was in bloom June 26. It was in flower at Magdalena Bay one day earlier at an elevation of 2,300 feet [701^{m}]. This flower was the first to bloom at Pitlekaj, 66° N., the winter quarters of the *Vega*, June 23, 1879.

No. 10. *Braya alpina*, Sternb. var. *glabella*; *B. purpurascens*, Br.

No. 11. *Cheiranthus pygmæus*, Adams; *Hesperis pygmæus*, Hook. In bloom June 8, 1883; from 50 to 1,000 feet [15 to 305^{m}] altitude, usually on very rocky soil; all specimens had very long roots, were generally young, and rarely 2 inches [50^{mm}] high. A few were found with the stem and pods of two years' preceding growth; one of these was 6 inches [152^{mm}] high. A few peculiar examples were found on very rocky soil, from 700 to 1,000 feet [213 to 305^{m}] elevation, which were from 2 to 4 inches [50 to 101^{mm}] high, on which * *Puccinia cheiranthi*, E. & E. (nov. sp.), were found.

No. 12. *Parrya arenicola*, Hook. f. (?).

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* NOTE.—*Puccinia Cheiranthi*, Ellis & Everhart (n. sp.). On *Cheiranthus pygmæus*, Grinnell Land.

III. Sori hemispheric, brown, naked ½ to $\frac{3}{4}^{mm}$ in diameter, thickly scattered over both sides of the leaves, but (in the specimen examined) not confluent. Spores oblong or clovate-oblong, light brown, constricted at the septum, 35–53 by 15–22$^{\mu}$, either consisting of two subequal cells, or oftener the upper cell broader and shorter (subglobose), and the lower one tapering into the stout, rather persistent pedicel, which is about as long as, or a little longer than, the spore itself; epispore smooth or faintly but rather coarsely roughened above, thickened and lacerated at the apex, so as to resemble somewhat the remains of the calyx on a currant or huckleberry.

No. 13. *Eutrema Edwardsii*, R. Br.

No. 14. *Cardamine pratensis*, Linn. Found in mossy soil at about 1,000 feet [305m] elevation. No flowers. Even in Spitzbergen two degrees to the south, Nordenskiöld says that the *Cardamine pratensis* is rarely found in flower.

No. 15. *Lychnis apetala*, Linn. In bloom June 30, 1883; from the sea-coast to 1,000 feet [305m] altitude, in rocky soil; the specimens are from 1 to 5 inches [25 to 127mm] high; usually 1 flowered, occasionally with 2 or even 3 flowers.

No. 16. *Lychnis triflora*, R. Br. With and similar to the preceding, but did best on hard, clayey, dry soil, the culm and leaves more pubescent, the leaves broader and obtuse; mostly 1 flowered, rarely 2 or 3.

No. 17. *Stellaria longipes*, var. *Edwardsii*, T. and G. In bloom June 14, 1883; from the sea to 1,000 feet [305m] altitude, on loamy soil and among mosses; 2 to 4 inches [50 to 101mm] high. Nordenskiöld found the *S. Edwardsii* in flower, under favorable conditions, at an elevation of 1,500 feet [457m], June 26, 1861, at Brandywine Bay, Spitzbergen.

No. 18. *Cerastium alpinum*, Linn.; *C. lanatum*. In bloom June 6, 1883; from the coast to 800 feet [246m] altitude, doing best on loamy soil; the largest specimen 4½ inches [114mm] high; the peduncles usually 1, rarely 3, flowered. This plant was found at Lockwood Island, 83° 24′ N. *C. alpinum* in flower at Treurenberg Bay, 79° 57′ N., the beginning of July, 1861. At Magdalena Bay, Spitzbergen, it was in bloom, at an elevation of 2,300 feet [701m], on June 25, 1861.

No. 19. *Arenaria verna*, Linn., var. *hirta*. 1 to 2 inches [25 to 50mm] high; 200 to 1,000 feet [60 to 305m] altitude, on rocky soil.

No. 20. *Arenaria groenlandica*, Spris. (?). Leaves only.

No. 21. *Dryas octopetala*, var. *integrifolia*, Ch. and Schl. In bloom June 16, 1883; from the coast to 1,500 feet [457m] altitude; the specimens are 1 to 2 inches [25 to 50mm] high; the leaves mostly entire, sometimes minutely toothed. The plant was the most common one; beds of acres in extent were found on loamy soil, especially in the interior of Grinnell Land. Some specimens had 22 petals; both whole-leafed and dentated specimens were found. This was among the plants at Lockwood Island, 83° 24′ N.

No. 22. *Potentilla nivea*, Linn. From the coast to 1,000 feet [305m] altitude on rocky soil; specimens from 2 to 5 inches [50 to 127mm] high. *P. nivea* was in bloom at Winter Island, 67° 11′ N., about June 29, 1822.

No. 23. *Potentilla nivea*, var. *quinata*, Lange.

No. 24. *Potentilla pulchella*, R. Br.

No. 25. *Potentilla maculata*, Pour.

No. 26. *Saxifraga rivularis*, L., var. *hyperborea*, Hook. Nordenskiöld found it opening its buds, May 24, 1873, at Mussell Bay, but it did not bloom until after June 14.

No. 27. *Saxifraga flagellaris*, Willd. In bloom June 19, 1883; from 1,200 to 1,800 feet [366 to 549m] altitude, on moist loam or in the beds of brooks; generally but 1 flowered, rarely 3 flowered.

No. 28. *Saxifraga tricuspidata*, Retz. Plentiful at from 800 to 1,900 feet [244 to 579m] altitude; not found below 800 feet [244m]; grew best on rocky soil; specimens 2 to 4 inches [50 to 101mm] high; generally 1 flowered, but occasionally 3 or 4.

No. 29. *Saxifraga cernua*, Linn. From 200 to 1,800 feet [60 to 244m] altitude, in beds of moss and lichens or by the sides of brooks; specimens 3 to 8 inches [76 to 203mm] high. Found in bloom, June 26, 1861, at Treurenberg Bay, 79° 57′ N.

No. 30. *Saxifraga oppositifolia*, Linn. In bloom June 1, 1882, and June 4, 1883; only less common than *dryas;* from the coast to 1,900 feet [579m] altitude; grew best on loamy soil; flowers 4 to 9 petaled, varying from faint pink (almost white) to dark purple. This almost universal Arctic plant was found at Lockwood Island, 83° 24′ N. The dates and localities where the *S. oppositifolia* was the *first* flower of the year have been noted above. In addition, Dr. McCormick, R. N., reports that it was the first flower in bloom at Beechy Island, 74° 5′ N., in 1853. He also found it blooming, June 24, 1852, at Upernivik, 72° 47′ N. The astonishing hardiness of this plant was frequently commented on by our party, but the most striking illustration, paralleled it may be said in our experience, is that given by Feilden, who says: "This plant I often find in spots bared of snow by the wind, and consequently exposed to the low temperature of fifty and sixty degrees below zero [−46° and −51° C.]; yet at the extremity of each stalk, inside of the russet-brown green hair-fringed leaves, a bud is to be found, which even the intensity of the cold fails to wither."

No. 31. *Saxifraga nivalis*, Linn. In bloom June 23; not very common; found only between 800 and 1,200 feet [244 to 366^{m}] altitude; grew best in damp, mossy soil; specimens mostly 2 to 3 inches [50 to 76^{mm}] high, some found as high as 6 inches [152^{mm}].

No. 32. *Saxifraga cæspitosa*, Linn. At Winter Island, in 1822, Parry found this plant in flower about June 27.

No. 33. *Epilobium latifolium*, Linn. From the coast to 1,200 feet [366^{m}] altitude; found only on rocky soil, in the beds of brooks and in spots having southern exposure; specimens from 2 to 4 inches [50 to 101^{mm}] high; generally 1 flower, sometimes 3 or 4.

No. 34. *Erigeron uniflorus*, L. In bloom June 23, 1883; from the sea to 800 feet [244^{m}] altitude, on loamy and rocky soil, doing best on the latter and at the greatest elevation; specimens near the sea about 2 inches [50^{mm}] high, at higher points from 3 to 5 inches [76 to 127^{mm}].

No. 35. *Erigeron compositus*, var. *trifidus*, Gray. In bloom June 25, 1883; from 100 to 800 feet [30 to 244^{m}] altitude; specimens from 1 to 3½ inches [25 to 89^{mm}] high; generally with a single stem and flower, occasionally 2 or 3 flowering stems from one root; late in the season flowers sometimes faded to a pinkish color.

No. 36. *Arnica montana*, L.; *Arnica alpina*, Olin. From the coast to 1,500 feet [457^{m}] altitude, in rocky and clay soil; grew best on rocky soil; the specimens near the sea flowered late, and rarely more than 2 inches [50^{mm}] high; the best found about 700 feet [213^{m}] altitude; the largest found were about 6 inches [152^{mm}] high. Flowered June 27, 1883.

No. 37. *Taraxacum officinale*, var. *pallida*, Koch. In bloom in June 1882 and 1883; from the coast to 200 feet [61^{m}] altitude, on loamy and clay soil; 2 to 4 inches [50 to 101^{mm}] high; there were two shades of color, deep yellow and yellowish white.

No. 38. *Cassiope tetragona*, Don. In bloom July 1, 1882; very common in the valley adjoining Lake Hazen, extensive beds having been seen at elevation from 400 to 500 feet [122 to 152^{m}]; it also grew in considerable quantities about 100 feet [30^{m}] above the sea on the south side of Bellot Island, and flowered late in June, 1883.

No. 39. *Androsace septentrionalis*, Linn. In bloom June 22, 1883; from 50 to 500 feet [15 to 152^{m}] above the sea, in clay or rocky soil; doing best in the former; specimens from 1½ to 3 inches [38 to 76^{mm}] high.

No. 40. *Pedicularis capitata*, Adams. In flower July 8, 1883; from 100 to 700 feet [30 to 213^{m}] latitude, on loamy sail, with *dryas;* generally but single stem and flower; occasionally specimens were seen with two flowers to single stem. From three to six inches [76 to 152^{mm}] high.

No. 41. *Pedicularis Langsdorffii*, var. *lanata*, Gray. In bloom June 22, 1883; from 50 to 100 feet [15 to 30^{m}] above the sea, in loamy soil; in company with *dryas.*

Nordenskiöld speaks of specimens at Magdalena Bay, June 25, 1861, nearly a foot [305^{mm}] high.

No. 42. *Oxyria* (*reniformis*, Hook) *digyna*, Campd. In bloom June 5, 1882, and June 6, 1883; specimens over 7 inches high [178^{mm}] seen in the interior, and over 5 inches [127^{mm}] near the coast; grew best on clay soil. A very abundant plant.

The *O. reniformis* was found in bloom at Treurenberg Bay, 79° 57′ N., June 26, 1861. On July 26, 1861, Nordenskiöld speaks of it as "a foot [305^{mm}[high" at Brandywine Bay, Spitzbergen. At Winter Island, 67° 11′ N., it was just putting forth its first red leaves on July 10, 1822. Near Assistance Bay, 74° 40′ N., it was first seen June 24, 1853.

No. 43. *Polygonum viviparum*, Linn. From 100 to 800 feet [30 to 243^{m}] altitude; generally in beds or side of brooks; in rocky soil.

No. 44. *Salix arctica*, Pall. In bloom June 2, 1882, and June 6, 1883; from coast to 1,800 feet [549^{m}] altitude; the largest specimens on the coast were about 1 foot [305^{mm}] long, and less than an inch [25.4^{mm}] in diameter at base of branches; in the interior of Grinnell Land specimens 1½ feet [457^{mm}] long, with extreme diameter of 1.5 inches [38^{mm}], were found.

At Treurenberg Bay, 79° 57′ N., *S. arctica* began to open its buds June 11, 1861, and was in bloom June 26.

No. 45. *Luzula hyperborea*, R. Br., *L. confusa*, Lindb. *L. hyperborea* was found in bloom June 25, 1861, at Magdalena Bay, Spitzbergen, 2,300 feet [701^{m}] above the sea.

No. 46. *Juncus biglumis*, Linn. Found only in the margins of small ponds from 100 to 800 feet [30 to 244^{m}] elevation; largest specimen 5½ inches [140^{mm}] high.

No. 47. *Eriophorum angustifolium*, Roth. In bloom June 29; from 800 to 1,200 feet [244 to 366^{m}] altitude, generally in marshy soil, near mosses, lichens, and grasses; the specimens were from 3 to 8 inches [76 to 203^{mm}] high.

No. 48. *Carex atrata*, Linn; or *ustulata*, Wahl. From 600 to 1,200 feet [183 to 366^{m}] altitude, in marshy or damp loamy soil; specimens from 1 to 6 inches [25 to 152^{mm}] high.

No. 49. *Carex vulgaris*, var. *hyperborea*, Book. In bloom July 25, in a marshy spot near the sea specimens from 1½ to 3½ inches [38 to 89^{mm}] high.

No. 50. *Carex rupestris*, All.

No. 51. *Kobresia scirpina*, Willd.

No. 52. *Carex nardina*, Fries.

No. 53. *Carex misandra*, R. Br.

No. 54. *Alopecurus alpinus*, Linn. In bloom June 18, 1883; grew generally on loamy soil; specimens near the coast 1 foot [305^{mm}] high; in the interior, on the shores of Lake Hazen, specimens from 12 to 18 inches [305 to 457^{mm}] high were of frequent occurrence.

No. 55. *Arctagrostis latifolia*, Grisd. From the coast to 800 feet [244^{m}] altitude; in loamy soil near the sea, and in marshy soil at greater elevation; specimens from 5 to 6 inches [127 to 152^{mm}] high.

No. 56. *Deschampsia brevifolia*, R. Br.;—*Aira arctica*, Spr. Specimens from 2 to 4 inches [50 to 101^{mm}] high. Probably not the *Aira arctica* of Rothrock's "Flora of Alaska," nor the *Aira cæspitosa*, var. *arctica*, of Thurber in "Parry's Plants," &c.

No. 57. *Trisetum subspicatum*, var. *molle*, Gray. From the coast to 800 feet [244^{m}] altitude, varying much according to location; the finest specimens about 7 inches [178^{mm}] high in rocky soil at geatest elevation.

No. 58. *Poa arctica*, R. Br.; 2 to 5 inches [50 to 127^{mm}] high.

No. 59. *Poa cenisia*, All.

No. 60. *Poa abbreviata*, Br.

No. 61. *Poa alpina*, Linn.; var. *vivipara*.

No. 62. *Poa cæsia*, Sm. var.

No. 63. *Poa laxa*, Hœnke. Specimens 3 to 8 inches [76 to 203^{mm}] high.

No. 64. *Festuca rubra*, Linn. Specimens 3 to 5 inches [76 to 127^{mm}] high.

No. 65. *Agropyrum dasystachyum*, var. *violaceum*, Horum. Specimens 2 to 7 inches [50 to 178^{mm}] high.

No. 66. *Cystopteris fragilis*, Bernh. From near the coast to 1,300 feet [396^{m}] altitude; specimens from 3 to 6 inches [76 to 152^{mm}] high on rocky soil.

This fern was found by Feilden at Cape Sabine, 250 feet [76^{m}] above the sea, July 31, 1875.

The *C. fragilis*, near Cross Bay, is the first known fern from Spitzbergen, Nordenskiöld says.

No. 67. *Equisetum variegatum*, Schl. From 50 to 100 feet [15 to 30^{m}] altitude, on clay and loamy soil, doing better on latter; specimens infertile, from 1 to 6 inches [25 to 152^{mm}] high.

No. 68. *Equisetum arvense*, Linn. Similar in habit to the preceding; specimens smaller (1 to 3 inches [25 to 76^{mm}] high), infertile.

No. 69. *Diapensia lapponica*, N.

MOSSES AND LICHENS.

By Rev. E. Lehnert and Lieut. A. W. Greely.

The collection of mosses and lichens made by the Lady Franklin Bay Expedition was a large and important one, and its necessary abandonment is greatly to be regretted.

First Lieut. F. F. Kislingbury employed his leisure time during the summers of 1882 and 1883 in making, in the vicinity of Fort Conger, a collection of lichens, in which was embraced every possible species he could distinguish. He had no training for such work, but experience has shown that an intelligent man, with good powers of observation, can do creditable work in a comparatively unknown field.

If any officer connected with the expedition had possessed sufficient botanical knowledge, the light and portable character of lichens and mosses would have enabled us to have brought back specimens of all important or doubtful species. The mosses and lichens pertaining to the Government collection were carefully packed and boxed ready for shipment, and were left in that condition. Those brought back belonged to my private collection, and comprised part of my personal baggage.

Unless otherwise set forth, the lichens and mosses were collected by me personally, and were carefully prepared for permanent preservation by Sergeant Joseph Elison.

The lichens and mosses from the highest point were, with one exception, brought back in the personal baggage of Sergeant D. L. Brainard, who collected them.

The identification of these specimens has been very kindly made by the Rev. E. Lehnert, of Washington, D. C., to whose courtesy and knowledge I am much indebted in this respect.

If not otherwise stated, the collections are from the immediate vicinity of Fort Conger, latitude 81° 44′ N., longitude 64° 45′ W.

Identification and accompanying notes, by Rev. E. Lehnert.

No. 1. *Campylopus flexuosus*, Brid. From Greely Fiord. Latitude, 80° 48′ 39″ N.; longitude, 78° 28′ W. Sergeant Brainard, collector.

No. 2. *Distichium capillaceum*, Bruch. and Schimp. Grinnell Land.

[All the plants from Grinnell Land were collected by Lieut. A. W. Greely himself. They had been well preserved, showed fine colors, and rather luxuriant growth. Unhappily only three species of them were fruiting, and conclusive determination was thus rendered difficult and in some cases impossible.]

No. 3. *Barbula alpina*, Br. Sch. From Lockwood Island, Greenland. Latitude, 83° 24′ N.; longitude, 40° 46′ W. Sergeant Brainard, collector.

No. 4. *Webera sphagnicola*, Schimp. (?). From Lockwood Island, Greenland. Latitude, 83° 24′ N.; longitude, 40° 46′ W.

No. 5. *Webera acuminata*, Schimp. Grinnell Land.

No. 6. *Webera cruda*, Schimp. Grinnell Land.

No. 7. *Webera longicolla*, Hedw. Grinnell Land.

No. 8. *Bryum purpurascens*, Br. and Sch. Grinnell Land.

No. 9. *Bryum brownii*, Br. and Schp. Grinnell Land. (Also collected by Maj. H. W. Feilden, R. A., to the northward of the eighty-first parallel, generally in the vicinity of Floeberg Beach, 82° 27′ N., and by Mr. Hart, in the neighborhood of Discovery Bay, Fort Conger.)

No. 10. *Bryum pendulum*, Br. and Sch. Grinnell Land. Collected by Mr. Hart also.

No. 11. *Bryum duvallii*, Voit. Grinnell Land.

No. 12. *Bryum turbinatum*, Schwaeg. Arctic form. Grinnell Land.

No. 13. *Cinclidium arcticum*, Br. and Sch. Grinnell Land.

No. 14. *Cinclidium subrotundum*, Selbg. Grinnell Land. Mixed with *C. arcticum*, Br. and Sch.

No. 15. *Cinclidium stygium*, Swartz. Grinnell Land.

No. 16. *Aulacomnium turgidum*, Schwaeg. Grinnell Land.

No. 17. *Aulacomnium* (*papillosum*, Muell. (?)). Grinnell Land.

No. 18. *Tetraplodon mnioides*, L. Grinnell Land. (Also collected by Mr. Hart in the neighborhood of Discovery Bay, Fort Conger.)

No. 19. *Philonotis fontana.* From Lockwood Island, north coast of Greenland. Latitude, 83° 24′ N.; longitude, 40° 46′ W. Sergeant Brainard, collector. Intermixed with *Webera sphagnicola*, Schimp. (Also collected by Maj. H. W. Feilden, R. A., to the northward of the eighty-first parallel, generally in the vicinity of Floeberg Beach, 82° 27′ N.)

No. 20. *Atrichum* (*parallelum*, Mitt. (?)). Grinnell Land. The incomplete state of the plant does not admit of certainty in identification, although exterior areolation of the leaves, &c., bring this plant closer to *A. parallelum* than any other one described. It might still be an undescribed variety of *A. undulatum*.

No. 21. *Pogonatum alpinum*, Roehl. Grinnell Land. (Also collected by Maj. H. W. Feilden, R. A., to the northward of the eighty-first parallel, generally in the vicinity of Floeberg Beach, 82° 27′ N.)

No. 22. *Pogonatum capillare*, Brid. Grinnell Land.

No. 23. *Polytrichum formosum*, Hedw. Grinnell Land.

No. 24. *Orthothecium rufescens*, Br. and Sch. Grinnell Land.

No. 25. *Orthothecium chryseum*, Br. and Sch. Grinnell Land. (Also found by Maj. H. W. Feilden, R. A., to the northward of the eighty-first parallel, generally in the vicinity of Floeberg Beach, 82° 27′ N., and by Mr. Hart in the neighborhood of Discovery Bay, Fort Conger.)

No. 26. *Orthothecium rubellum*, Mitt. (?). From Lockwood Island, north coast of Greenland. Latitude, 83° 24′ N. Sergeant Brainard, collector. Only a fragment, covered with mucor and fungi, and therefore somewhat questionable, but agrees with the description so far as a comparison was possible. (Also found by Mr. Hart in the vicinity of Discovery Bay, Fort Conger.)

No. 27. *Orthothecium* (*Douglassii*, Dubey (?)). Grinnell Land. Sergt. W. S. Jewell, collector. This moss, while coming closest to *O. Douglassii*, but different from all other specimens in my possession, might be a new species.

No. 28. *Camptothecium nitens*, Schreb. Grinnell Land. (Also collected by Maj. H. W. Feilden, R. A., to the northward of the eighty-first parallel, generally in the vicinity of Floeberg Beach, 82° 27′ N.)

No. 29. *Brachythecium salebrosum*, Hoff., var. Grinnell Land.

No. 30. *Brachythecium plumosum*, Swartz. Grinnell Land.

No. 31. *Eurhynchium vaucheri*, Lesg. Grinnell Land.

No. 32. *Amblystegium minutissimum*, Lull. (?) Grinnell Land. Might be *A. sprucei*, as it cannot be determined by the capsule, which is deficient, still its minuteness and other characteristics indicate the above species.

No. 33. *Harpidium* (*amblystegium*) *uncinatum*, Hedw. Grinnell Land. (Also found by Mr. Hart.)

No. 34. *Harpidium* (*amblystegium*) *lycopodioides*, Schwaeg. Grinnell Land. (Also found by Mr. Hart.)

No. 35. *Harpidium vernicosum*, Lindb. Grinnell Land.

No. 36. *Caliergon sarmentosum*, Wahl. Grinnell Land

No. 37. *Caliergon dilatatum*, Wils. Grinnell Land.

No. 38. *Caliergon turgescens*, Schimp. Grinnell Land.

No. 39. *Caliergon cordifolium*, Hedw. Grinnell Land.

No. 40. *Caliergon Richardsoni*, Misten. Grinnell Land. Sergt. W. S. Jewell, collector.

No. 41. *Hypnum* (*stereodon*) *plicatile*, Mitt. Grinnell Land. Found both by Major Feilden and Mr. Hart. The specimen collected by Feilden was at Mushroom Point, barren, adhering to a fragment of *Peltigera*.

To Dr. Lehnert's list and remarks I add, in order to complete this paper, the names of the following specimens found by the British Arctic Expedition of 1875–'76 to the northward of 81° 40′ N.:

By Maj. H. W. Feilden, R. A., Nos. 9, 19, 21, 25, 28, 41.

No. 42. *Distichium inclinatum*, S. W. Floeberg Beach. With young fruit. (Found also by Mr. Hart.)

No. 43. *Pottia heimii*, Hedw. Floeberg Beach. With ripe capsules.

No 44. *Tortula* (*barbula*) *icmadophila*. Schimper. Floeberg Beach. Barren.

No. 45. *Tortula* (*zygotrichia*) *leucostoma*, Brown. Mushroom Point, 82° 29′ 12″ N. With perfect capsules. (Also found by Mr. Hart.)

No. 46. *Tortula* (*syntrichia*) *ruralis*, Linn. Mushroom Point. A fragment adhering to a piece of *Peltigera*.

No. 47. *Didymodon rubellus*, Roth. Floeberg Beach. With *Bryum brownii*; very small and barren.

No. 48. *Eucalypta rhabdocarpa*, Schw. Floeberg Beach. With young fruit. Mushroom Point. Adhering to a fragment of *Peltigera*; with capsules passed maturity.

No. 49. *Voitia hyperborea*, Grev. et Arm. Floeberg Beach. With fruit in several stages.

No. 50. *Splachnum wormskioldii*, Hornem. Hayes Sound, Floeberg Beach, and Mushroom Point. All fertile. (Found also by Mr. Hart.)

No. 51. *Tetraplodon urceolatus*, B. and S. Mushroom Point and Port Foulke.

No. 52. *Bryum calophyllum*, Brown. Floeberg Beach and Payer Harbor. Barren. (Also found by Mr. Hart.)

No. 53. *Timmia austriaca*, Hedw. Floeberg Beach and Payer Harbor. Barren. (Also found by Mr. Hart.)

No. 54. *Myurella apiculata*, Hueb. Floeberg Beach. With *Pogonatum alpinum*; and a fragment of *Peltigera* from Mushroom Point. All barren.

The following mosses were collected by Mr. Hart: Nos. 9, 10, 18, 25, 33, 34, 41, 42, 45, 50, 52, 53.

No. 55. *Orthotrichum speciosum*, Nees. Winter-quarters H. M. S. *Discovery*. Barren.

No. 56. *Splachnum rasculosum*, L. Musk-ox Bay. Fertile.

No. 57. *Bryum arcticum*, Brown. Musk-ox Bay.

No. 38. *Brachythecium cirrhosum*, Schw. Winters-quarters H. M. S. *Discovery*. In very small quantities; barren.

The following additional species were obtained in 1875 south of 81° 30′ N. By Major Feilden, R. A.:

No. 59. *Dicranoweisea cuspula*, Hedw. Payer Harbor, 78° 42′ N. Not in fruit.

No. 60. *Rhacomitrium lanuginosum*, Dill. Payer Harbor. Barren. (Also by Mr. Hart in Hayes Sound, 78° 52′ N.)

By Mr. Hart:

No. 61. *Leptobryum pyriforme*, Linn. Hayes Sound. With fruit.

No. 62. *Amblystegium* (*Acroceratium*) *trifaruim*, Wet. and M. Hayes Sound. Barren.

Also a Jungermannia *Blepharozia trichophylla*, Linn. Hayes Sound.

The following Jungermannia and lichens were also brought back by me, and identified by Dr. Lehnert. They are from Fort Conger or vicinity, 81′ 44′ N.:

II. Hepaticæ.

No. 1. *Jungermannia ventricosa*, Dicks. Grinnell Land.

III. Lichens.

No. 1. *Cetraria cucculata*, Ach. Grinnell Land.

No. 2. *Cetraria chrysantha*, Tuck. Grinnell Land. Intermixed with fragments of *C. cucculata*.

No. 3. *Peltigera aphthosa*, Hoff. Grinnell Land.

No. 4. *Placodium elegans*, D. C. Cape Baird, latitude 81° 32′ N.

No. 5. *Placodium crenulatum*, Wallr. Cape Baird, latitude 81° 32′ N.

No. 6. *Cladonia rangiferina*, Hoff. Grinnell Land and Cape Baird.

No. 7. *Omphalaria* (?). A very scanty specimen was brought along, growing upon a rock from the most northern point reached. Its fragmentary character did not allow any determination. So far as the microscopical researches could be carried, the plant showed relation to the questionable *O. silesiaca*, Kbr., Lockwood Island 83° 24′ N., 40° 46′ W. Lieutenant Lockwood, collector.

It thus follows that fifty-eight species of mosses have been found north of latitude 81° 30′, of which seven species were found only by Major Feilden, four by Mr. Hart, thirty-one by the Lady Franklin Bay Expedition (Sergeants Brainard, Jewell, or myself), and sixteen by two or more of these parties.

Of the seven lichens brought back by chance, two possess especial interest. The species of *Omphalaria*, (*silesiaca*, Kbr.) was found adhering to a piece of quartz brought by Lieutenant Lockwood from the highest land ever attained, 83° 24′ N , 40° 46′ W.

The specimens of *Cladonia rangiferina*, Hoff., were found by me as a scanty growth at Cape Baird and in the vicinity of Fort Conger, at an elevation of about eighteen hundred feet [549^m] above the sea. In the valleys on the south side of Lake Hazen, in the interior of Grinnell Land, occasional patches of this lichen were found by me, though always of stunted growth.

The discovery of this lichen in Grinnell Land is of particular interest in connection with the remarks of Sir Joseph D. Hooker, president of the Royal Society, who, in commenting on the paucity of well-developed lichen specimens from Grinnell Land, says (Nares' "Voyage to the Polar Sea," vol. ii, p. 309):

> This is the more remarkable, as it might naturally be expected that such lichens would during the long winter season constitute the principal or only food of the musk-ox that exists in those regions. It is strange that the reindeer-moss (*Cladonia rangiferina*, Hoff.), so common in other arctic regions, appears to be absent from Grinnell Land.

He further says:

> Many circumstances combine to show that if there be land at the North Pole, lichens will be found there.

While the results of my own observations and experiences render it quite certain that the musk-oxen of Grinnell Land do not subsist upon the lichens, but on grass, saxifrage, dryas, and willow, yet our experiences bear out fully the scientific deductions of that great botanist as to the theoretical fauna of Grinnell Land and the country to the northward. This moss, which he expected, was discovered, and the observations of Lieutenant Lockwood on the highest attained land, in 83° 24′ N., prove the existence of considerable vegetation and numerous lichens at that latitude, and inferentially as far northward as Greenland extends.

ORNITHOLOGY.

APPENDIX No. 131.

By LIEUT. A. W. GREELY.

It was hoped that the Lady Franklin Bay Expedition would add somewhat to the ornithological information of the world and avoid the implied and merited reproach of Professor Newton, when he says, in his "Notes on Birds which have been found in Greenland:"

"The different American expeditions, judging from what has been published about them, added absolutely nothing [to Arctic ornithology], a fact particularly to be regretted when we regard the high latitudes they successively reached."

The surgeon of the expedition offered to perform the duties of naturalist (there being no funds for the employment of any specialist), and during a year's residence in Greenland was afforded opportunities for familiarizing himself with Arctic ornithology through the collections and kindness of Herr Krarup Smith, Royal Inspector of North Greenland, and Mr. Fencker, an employé of the Greenland Board of Trade, and an ardent ornithologist.

As elsewhere explained it became necessary, after twenty month's stay at Fort Conger, in the interest of the service, to assign the duties of naturalist to another officer, but the surgeon complied with his orders to furnish his successor with all information in his power—the result of his two years' labors on this subject, which will be found on pages 299 to 317, vol. I.

Sergeant Joseph Elison, by my orders, acquired at the Smithsonian Institution, through the courtesy of Professor Baird, considerable knowledge of the methods to be followed in properly preserving skins and specimens. During the two years at Conger quite a large number of birds were preserved for mounting, the greater part of the work being done by Sergeant Elison, which specimens, carefully packed and stored, are yet in our old quarters at that point.

The fact that not a day of spring and summer passed without one or more hunters being in the field, insured observation and collection of all birds within reach.

Except the half dozen species common to all Greenland ports, it fell to me to identify the birds collected, which were done from the description—often somewhat vague and general—given in the appendices of various Arctic works. Two small birds alone remained unidentified, a description of which, wanting in my own notes, I vainly hoped to find in the scattered notes, which comprised the Naturalist's Journal. My own journal has had to furnish the entire ornithological data, a fact which is unfortunate, as neither personal taste nor scientific work has ever turned my attention to this or kindred subjects.

The main point of ornithological interest rests in an identified egg of the knot (*Tringa canutus*) which was obtained from the bird itself. Unfortunately for ornithologists too much care was taken to assure its safety, and the egg was packed with other specimens weeks before the retreat by boats and so remains at Conger. A description noted at the time in my journal is given in connection with notes on the species. The egg (which must have been of full size, as itwas covered with a hard shell of ordinary thickness) proves smaller I understand from Mr. Seebohm than was anticipated, being 1.10 inch [28^{mm}] in its longer and 1.0 inch [25.40^{mm}] in its shorter axis.

My journal is fortunately quite full as to the dates on which birds were seen or obtained, as my attention was drawn the first year to the comparatively early date at which birds appeared in that very high latitude. A comparative table which was incompletely arranged at Conger, has been prepared which may serve a purpose in determining the average dates as well as the approximate limits in Arctic America of such migratory birds as frequent Smith Sound and Grinnell Land.

It is to be understood that both notes and compilations, made by one untrained in and even unacquainted with ornithological matters, are necessarily defective, and would not have been attempted but for the necessity. In this arrangement the "Notes on Birds of Greenland," by Prof. Alfred Newton, M. A., F. R. S, and "Notes from an Arctic Journal," by Maj. H. W. Feilden, F. R. S., have been most valuable. While following the new nomenclature and arrangement of species kindly made by Dr. C. Hart Merriam, Department of Agriculture, I have also given Newton's nomenclature.

In the "Arctic Manual," Professor Newton "On birds in Greenland," has pointed out that at the highest sixty-three species may be called denizens, and sixty-two stragglers, in Greenland. Of the regular denizens, forty-seven are recorded as inhabiting Northern Greenland, of which he specified as "not unreasonable to be looked for in Smith Sound, and some of them thence to the northward," thirty species might be found in Smith Sound; a number corresponding to the known species in Spitzbergen. He mentioned thirty-six to which attention should be particularly directed, as being the greatest possible number.

The observations of the various expeditions strikingly confirm the general estimate advanced by Professor Newton. Thirty-five birds have been found in the West Greenland Channel, *i. e.*, in or to the northward of Smith Sound. Thirty-two have been recorded north of 81° 30′ N. (eight of which can be called stragglers), or two more species than have been reported from Spitzbergen, a degree to the south.

The collated data, from various reports and narratives, which will be found in Table I, show the arrival and departure of the different species in the West Greenland Channel. My own data the first year were incomplete in this and many other respects, but the table is given as fully as possible in the hope that on account of the very high latitude it may be of interest if not of value.

The table for other Arctic localities, No. II, is not as complete as the list for Smith Sound, and in addition to other defects may contain errors as to species, into which an unpracticed writer is liable to fall when treating work foreign to his tastes and studies. The completion of the report of Captain Wohlgemuth, Austrian navy, permits the addition of data for Jan Mayen. The great interest shown lately in the migration of birds caused the preparation of these tables, and to an ardent student in that direction—to Dr. C. Hart Merriam—I have been indebted for the arrangement of the species under the new nomenclature.

No. 1. *Urinator lumme* (Gunn.). *Colymbus septentrionalis;* Red-throated Diver.

The most northerly specimen of the bird is undoubtedly that seen by Feilden, on September 2, 1875, at Floeberg Beach, 82° 27′ N. The bird, while not positively identified, was supposed to be of this species. A pair of these birds was seen by us July 18, 1883, near Dutch Island; and a specimen had been previously obtained by Sergeant Brainard, at Cape Baird, June 18, 1883.

It is not improbable that this diver breeds in Grinnell Land. Dr. McCormick reports that it breeds in Wellington Channel, where it was seen frequently in August, 1852, and also in 1853.

No. 2. *Fratercula arctica* (Linn.). Puffin.

Newton speaks of the puffin as nowhere common in Greenland. A specimen was obtained by us July 31, 1881, at Littleton Island. The bird has been observed by no other expedition in Smith Sound, nor as far as I know by any expedition in Arctic America.

Kumlien reports it as abundant from Belle Isle to Resolution Island, but did not see it in Cumberland Gulf.

No. 3. *Cepphus Mandtii* (Licht.). *Uria grylle;* Black Guillemot, or Sea-Pigeon.

The sea-pigeon was a common bird around the cliffs of Cape Lieber, where it probably nested, and was occasionally seen near Distant Cape. Feilden reports the bird as feeding in pools as far north as latitude 82° 33′, but he does not think that it breeds north of Cape Union. In 1875 it was found nesting at Cape Hayes and in Bessells Bay. The earliest specimens seen by us were June 9, 1882, and June 4, 1883. It was seen near Thank God Harbor February 28, 1872, and frequently in March. On May 26, 1876, one was seen by a sledge party at Thank God Harbor. The latest in that vicinity was observed near Floeberg Beach, 82° 27′ N., August 29, 1875. Hayes speaks of flocks at Port Foulke from February 10 to

17, 1861, and after September 1, 1860. There is not much doubt but that the bird is found as far northward in the West Greenland Channel, and as late in the year as open water is to be found near the precipitous cliffs. It similarly remains late near Point Barrow, and in 1882 was observed on December 2. At Winter Island, 1821–'22, they remained near throughout the winter.

At Cape Sabine the first specimen seen was March 15, 1884, in winter plumage.

As bearing on the time of their change of plumage the following notes have been brought together:

Igloolik, very white, March 22, 1823; Baffin Bay (McClintock) in white, October 19, 1857, and February 3, 1858, commenced advancing to summer plumage; Winter Island, one seen spotted all over black and white June 25, 1882, had nearly assumed their summer plumage June 29, 1822.

On September 3, 1868, in 78° 20′ N., 2° 17′ W., Nordenskiöld speaks of *U. grylle* "as scarcely recognizable in their speckled winter dress."

"Amongst hundreds that I saw in the vicinity of Fortune Bay (near Godhavn)" says Feilden, "was one completely black, the white spot on the scapulars not showing."

No. 4. *Uria troile* (Linn.); or, *Uria lomvia* (Linn.). *Alca bruennichii* or *arra;* Bruennich's Guillemot, or Murre.

The most northern specimen observed by the expedition of 1875 was in Buchanan Strait, 79° N., which coincides with our own experiences. The most northward examples obtained by us were on July 31, 1881, at Littleton Island, and in 1884, north of Cape Sabine, on June 11. Bessels speaks of it north of 81° as "quite abundant and nesting."

This guillemot was found breeding in large numbers in N. W. Cary Islands in 1851, and also later on the NE. face of Hakluyt Island.

It is interesting to note that the murre was found by De Long breeding on Bennett Island, 76° 39′ N., July 16, 1881.

No. 5. *Alle alle* (Linn.); *Mergulus alle;* Little Auk, or Rotge, or Dovekie.

The little auk was not observed by our expedition north of Buchanan Strait, where it was last seen by the Arctic expedition of 1875. I concur in Feilden's opinion that they do not breed to the north of Foulke Fiord.

Two examples were observed in Newman Bay in 1872. Bessels observed the bird May 24–26, 1873, at Polaris house; and Hayes reports a specimen as seen at Foulke Fiord after September 3, 1860, and also during his boat journey near Cape Parry, September 11, 1854. Little auks were observed by Feilden September 17, 1876, in 73° 40′ N.

The important part which this bird plays in the food supply of the Arctic Highlanders has been pointed out by Kane, Hayes, and Bessels. This bird was seen by Parry in 1827, to 82° 45′ N. One was shot off Bedford Pim Island, near Cape Sabine, in Buchanan Strait, June 4, 1884.

The little auk undoubtedly returns to the north water as soon as it opens. Leigh Smith on Franz Josef Land noted this bird as early as March 10, 1882, and on September 12, 1879, it was seen in 78° 24′ N., on the meridian of that land.

De Long observed the rotge July 12, 1881, in 77° N., 151° E., which, unless there is some error, makes the range over 230° of longitude.

No. 6. *Stercorarius parasiticus* (Linn.). Common Skua, or Parisitis Jaeger.

The common skua was obtained at Thank God Harbor in 1872. But two specimens seen by us, June 18 and 20, 1883, by different observers, and none by the English expedition of 1875–'76. Dr. McCormick records it at Wellington Channel as late as September 2, 1852.

No. 7. *Stercorarius longicaudus* (Virill.). *Stercorarius parasiticus longicaudatus;* Buffon Skua, or Long-tailed Jaeger.

This was the most common bird in the vicinity of Discovery Harbor. Nearly two hundred were killed by us at Conger, in 1882, as food for young owls. One was seen June 6, 1876, at Depot Point, 82° 45′ N. The first seen by us was June 3, 1882, and a day later in the month the following year. The first specimen at Sabine was observed May 23, 1884. This bird fed very largely on lemmings. Our observations were

the same as Feilden's, who says: "It lays its two eggs in a small hollow in the ground, and defends its nest with the utmost bravery." Many specimens were seen by me in the interior of Grinnell Land, in July, 1882, when the bird was so bold as to be troublesome when we were in camp.

No. 8. *Gavia alba* (Gunn.). *Pagophila eburnea;* Ivory Gull.

The only specimen obtained by us was August 7, 1881, in Hall Basin, and not more than three or four examples were seen in our two years at Fort Conger. Feilden says that in 1875 and 1876 this gull was not infrequently observed, but not beyond latitude 82° 20′ N. An example was seen as late as September 1, 1876, in Lincoln Bay, 82° 6′ N., in August, 1876. The earliest specimen noted was by Coppinger, in Petermann Fiord, May 28, (?) 1876.

The ivory gull was thought by Feilden to be nesting at Brevoort Island July 31, 1875, and later that year a pair was observed breeding at Cape Hayes.

Two ivory gulls were seen at Point Barrow, where it is a rare visitor, says Murdoch, by Lieutenant Ray, early spring 1882, and later in the autumn a few were seen flying up the coast with Ross's gulls—none were seen in 1883.

No. 9. *Rissa tridactyla* (Linn.). Kittiwake.

The kittiwake was obtained September 12, 1871, at Thank God Harbor; and Bessels says it was the last bird observed near the ship in 1871, and that flocks were seen, June, 1872, in Newman Bay. Hayes in 1854 killed a kittiwake as late as September 20 seven miles south of Cape Parry. The expedition of 1875–'76 did not observe this bird to the northward of Port Foulke, but they were very numerous in the North Water, September 10–16, 1876. A pair was seen by us, June 23, 1883, at Distant Cape, near Fort Conger.

No. 10. *Larus glaucus* (Brunn.). Glaucous Gull, or Burgomaster.

The gull was not an uncommon one in the vicinity of Fort Conger, but no breeding-place was ever discovered. Feilden mentions this gull as seen to 82° 34′ N., and until September 1, 1875. It was recorded two days later in 1871 at Thank God Harbor. A glaucous gull was seen in Rawlins Bay August 20, 1876. The earliest specimen noted by us at Conger was June 5, 1883. At Polaris house, about 78° 20′ N., it was seen as early as May 10, 1873. At Thank God Harbor it appeared June 12, 1872. Hayes mentions burgomasters in Booth Sound September 24, 1854. Leigh Smith records this bird as early as March 5, 1882. in Franz Josef Land, and Dr. McCormick found it breeding in Wellington Channel by June 21, 1853. In general the burgomaster or ice-gull may be said to be the earliest of gulls to arrive and the last to depart.

No. 11. *Larus leucopterus* (Fab.). Iceland Gull.

This bird is evidently an infrequent visitor of Smith Sound. Newton states that it breeds in both inspectorates of Greenland, and it is the most common gull after the kittiwake. He also says it has been observed on the east coast, and said to breed in the Parry Islands. Two specimens were seen—one by myself May 19, 1882, in Watercourse Bay, and the second June 5, 1883, by Private Connell, at Distant Cape. The bird was identified simply by its small size and pale blue mantle. Those seen were evidently stragglers.

Murdoch says that Mr. Howard Saunders identified supposed Iceland gulls from Point Barrow as being glaucous gulls, and consequently the gulls referred to may have also been *L. glaucus.* The early date forbids the examples from being young, and there is no doubt of their dissimilar appearance to any glaucous gulls seen as regards size and color of mantle.

No. 12. *Xema sabinii* (Sab.). Sabine's Gull.

The Sabine gull was first obtained by Bessels in Smith Sound in 1871. Probably the most northern specimen ever killed was at Fort Conger, July 6, 1882. The gull was an exceedingly uncommon one, and the few specimens seen were in company with Buffon's skuas.

Cape Dalhousie, which in Richardson's time was "the most westerly ascertained breeding-place," has given way to Cambridge and Walker Bay in 1852–'53, and now to Point Barrow in 1882, which directly connects it with the Old World, "When," says Seebohm, "it has been found on the Siberian side of Behring's Strait."

No. 13. *Sterna paradisæa* (Brunn.). *Sterna macrura;* Arctic Tern.

The tern was found breeding on Breakwater Island, adjoining Bellot Island, by Feilden, in 1875, and by us at the same place. The bird was not uncommon in the vicinity of Fort Conger, and was not especially

shy. The first tern appeared near Floeberg Beach, June 16, 1876. The first seen by us was June 21, 1882, and one was killed June 18, 1883—both specimens in or near the Bellows, a valley eighteen miles southwest of Fort Conger. It was observed June 21, 1854, by Morton at Cape Constitution. Eggs of the tern were obtained June 28, 1861, at Foulke Fiord. McClintock speaks of the tern in Baffin Bay, 66° 45′ N., April 10, 1858, as the first (with a gull the same day) of his summer visitors, six days before the snow-bunting. "In the mid-Atlantic," says Feilden, "a single Arctic tern approached the ship during a gale of wind." It was seen as late as August 26, 1875, at Discovery Harbor, which is probably a late date for it to remain to the north of Smith Sound, as Kane speaks of it as gone September 10, 1853.

No. 14. *Fulmarus glacialis* (Linn.). *Procellaria glacialis;* Fulmar, or Mallemuke.

This bird is evidently an infrequent visitor of Kennedy and Robeson Channels. A single specimen was seen June 26, 1876, near Floeberg Beach, by Feilden, in 82° 30′ N., and one found dead near by a few days later by Lieutenant Edgerton, R. N. Feilden also saw it at Cape Isabella, and says it was numerous in the North Water September 10–16, 1876. Bessels speaks of the bird, September 19, 1872, as rarely seen. Morton reports it as one of the species observed June 22, 1854, at Cape Constitution. Parry saw a "mollie" July 16, 1827, in 82° 27′ N., on the meridian of Spitzbergen, and later about 82° 45′ N. Leigh Smith noted one in Franz Josef Land in 1882 at the very early date of February 24.

No. 15. *Clangula hyemalis* (Linn.). *Harelda glacialis;* Long-tailed Duck, or Old Squaw.

Specimens were obtained at Floeberg Beach, 82° 27′ N., by Feilden as late as September 16, 1875, and were seen July 12, 1876, in 82° 40′ N. He speaks of the bird as found in numbers the summer of 1876. Long-tailed ducks were not uncommon in the vicinity of Discovery Harbor and the interior of Grinnell Land. The earliest specimens obtained by us were June 6, 1883, and June 17, 1882. Kane speaks of the bird as arriving, June 16, 1854, at Van Rensselaer Harbor. The long-tailed duck arrived at Igloolik in 1823, the first of the ducks on May 23. At Cape Sabine the first specimen was observed by us June 1, 1884. The breeding plumage of the male is wonderfully varied, scarcely two examples ever being alike.

No. 16. *Somateria mollissima* (Linn.). Eider.

The eider duck was seen in considerable numbers in the vicinity of Discovery Harbor. It was not obtained by Feilden north of Cape Union, but a flock was observed September 5, 1875, at Dumb-bell Bay, about 82° 30′ N.

A flock was seen at Thank God Harbor as early as June 4, 1872, and in 79° N. as late as November 4, 1872. On September 24, 1854, Hayes saw, near Cape Parry, small flocks flying southward. The first eiders at Sabine were observed May 28, 1884.

A flock of ten, females and young, caught during the early winter, was killed by us September 7, 1881, in the southwestern part of Discovery Harbor. Our experiences thus tend to confirm Kumlien's observations in Cumberland Sound—that after the breeding season the males separate from the females and migrate southward earlier than the mother-bird and her brood.

"The old males," says Kumlien, "separate from the females and young as soon as the breeding season is over, and * * also migrate southward much earlier than the females and young. During the autumn of 1877 (in Cumberland Sound) we procured about seventy, * * but not a single adult male was * * ever seen."

Rae noted the same habit at Repulse Bay in 1847, reporting only females left August 17. Nordenskiöld also found females and young only remaining at Mussell Bay at the end of October, 1872, and Dr. McCormick similarly obtained only females and young ones August 24, 1852, in Wellington Channel.

No. 17. *Somateria spectabilis* (Linn.). King Eider.

Feilden saw this species as far as 82° 30′ N., June 26, 1876. The earliest specimens obtained by us were June 11, 1883, five days earlier than in the preceding year. At Thank God Harbor a king duck was killed June 12, 1872, and a duckling seen July 15. At Igloolik king ducks arrived April 16, 1823. At Cape Sabine it made its appearance May 26, 1884. The latest specimen in Smith Sound was obtained by Hayes near Cape Parry, September 21, 1854. Several small flocks were noticed flying southward on that and preceding days.

No. 18. *Chen hyberborea nivalis* (Forster). *Chen hyperboreus*; Lesser Snow-Goose.

This bird has not been previously obtained in Smith Sound or to the northward. A pair was seen June 12, 1882, by Private Connell, near Fort Conger, and another by Lieutenant Lockwood, June 13, 1882, on the shores of Sun Bay.

Richardson speaks of the snow-goose as breeding in Wollaston Land in the beginning of June.

Armstrong observed snow-geese in Banks Land September 7, 1850, and at Mercy Bay, May 31, 1851 and 1852.

No. 19. *Branta bernicla* (Linn.). *Bernicla brenta*; Brent Goose, or Brant.

This species appeared at Floeberg Beach, June 9, 1876, and Feilden found it breeding in 82° 33′ N. It was comparatively numerous in the vicinity of Fort Conger (Discovery Harbor), but we found it very wary. The earliest examples seen north of Kennedy Channel were at Thank God Harbor, June 4, 1872. At Cape Sabine it was first observed May 30, 1884. On August 20, 1876, brent geese were seen at Cape Lieber, going south. At Thank God Harbor specimens were obtained as late as September 6, 1871. The brent goose in 1861, was seen as early as May 23, flying to the NE. from Amsterdam Island, Spitzbergen.

Feilden says:

"No flocks of Brent geese, or indeed a single individual of this species, or any of the *Anatidæ*, were seen winging their way due north over the Frozen Sea, which would have been the case did migration extend in that direction. In every instance they clung to the coast lines."

No. 20. *Grus canadensis (?)* (Linn.). Little Brown Crane.

This species is mentioned doubtfully. Two strange birds were seen, June 23, 1883, in the Bellows, about 81° 40′ N., by one of my most reliable and observant men, Private Biederbick. He was distant about 200 yards from them. Their backs were whitish, with an ashy or silvery gray effect, and the long legs seemed to be reddish. The birds attracted his attention by a peculiar noise, which he thought was made by "clapping" their bills. When alarmed the birds rose with difficulty, making much ado with legs and wings, and flew slowly and heavily.

It was probable that a flock of cranes passed *southward* over Fort Conger, July ——, 1883.

The crane breeds as far north as Igloolik, near the 70th parallel, and probably in Banks Land if not Melville Island, as it was seen at Walker Bay, 1851–'52, and at Mercy Bay in 1852. On June 20, 1883, four were seen at Point Barrow.

No. 21. *Crymophylus fulicarius* (Linn.). *Phalaropus fulicarius*; Red Phalarope.

Feilden obtained a female bird June 20, 1876, in 82° 27′ N. But very few specimens were seen by us, the earliest June 18, 1883. One was killed June 26, 1883, at Distant Cape, and a second, July 2, 1883, at Cape Baird.

Osborn mentions *phalaropus* August 21–24, 1851, in Booth Sound, about 76° 52′ N.

No. 22. *Tringa canutus* (Linn.). Knot.

It appears probable that the favorite breeding-place of this bird is in the neighborhood of the Parry Islands. Captain Sabine found it nesting in large numbers, in 1820, on Melville Island, but elsewhere in Arctic America the bird is either unknown or is comparatively rare. Major Feilden finds that it was obtained in Cambridge Bay, 69° N., 105° W., in July, 1853. Murdoch's experience at Point Barrow tends further to confirm this opinion. The knot was rare in that locality, but a "female was taken, on July 11, 1882, with full-sized yolks in her ovaries."

The bird breeds in small numbers in the vicinity of Fort Conger (Discovery Harbor), but it was exceedingly wary, and we never obtained the nest. I not only spent hours in watching a nesting-bird, but had several of my most patient hunters occupied on similar duty, without success. I have no doubt twenty pairs nested within a couple of miles of Fort Conger. They arrived June 3, 1883, and immediately nested. The young were killed July 31.

On June 9 I directed that a few knots be killed for specimens, having before ordered that they be undisturbed until the nest was found. That day Sergeant Ralston shot a female. There were in the egg-sac twenty-one eggs in all stages of growth. One was a completely-formed hard-shelled egg ready to be laid. A shot had broken in the shell at one point, but it was not sufficiently injured to prevent measurement.

The egg was 1.10 inch [28mm] in the longer axis, and 1.0 inch [25.40mm] in the shorter. The ground-color was light pea-green, closely spotted with brown in small specks, about the size of the head of an ordinary pin. The next-sized egg was without shell, round, bright orange color, veined with deep red.

Feilden, who killed a male and female in full breeding plumage, June 5, 1876, in 82° 45′ N., has described the soaring of these birds, and the peculiar whirring noise they make.

It would seem possible that eggs of the knot were obtained by Captain Lyons, who states that the knot "lay four eggs on a tuft of grass, without being at the pains of forming any nest."

Kumlien relates that a flock of knots alighted on the deck of the schooner *Florence*, in Cumberland Sound, November, 1877, but none were seen on land at any season.

No. 23. *Tringa maritima* (Brunn.). Purple Sand-Piper.

This species was observed by Bessels near Thank God Harbor in 1872. A few specimens were seen and obtained by us in 1882–'83.

Dr. McCormick reports a purple sand-piper in Wellington Channel, August 23, 1852.

"In Cumberland Sound," says Kumlien, "the purple sand-piper is the first wader to arrive in spring and the last to leave in autumn." The first was seen June 4, 1878, and they remained "until November, as late as they could find any exposed shore at low tide. * * * It is said that some remain in the fiords of South Greenland all winter."

No. 24. *Calidris arenaria* (Linn.). Sanderling.

Feilden reports seeing a sanderling, in 82° 45′ N., June 5, 1876, it being in company with knots and turnstones. He says that the bird was rare, but he obtained several pairs and two eggs, a plate containing illustrations of which is to be found in the Feilden Ornithology in "Nares' Voyage to the Polar Sea," Vol. II. The nest, found June 24, in 82° 33′ N., was on a gravel ridge, at an altitude of several hundred feet above the sea, and the eggs were deposited in a slight depression in the center of the recumbent plant of willow, the lining of the nest consisting of a few withered leaves and some of the last year's catkins. By August 8 the young were able to fly. A specimen was seen June 4, 1876, at Depot Point. The bird was not obtained by us unless, as is probable, it was one of our unidentified specimens, obtained August 31, 1882, of which my naturalist unfortunately made no note.

The sanderling appears to be common to nearly all Arctic America, although not plentiful. It has been seen in early June on Melville Island, Winter Island, at Igloolik, Walker Bay, Princess Royal Island, and Mercy Bay. At Cumberland Sound, Kumlien saw only one small flock, in September 1877. Although it is, according to Seebohm, a common summer bird in Alaska, it was not seen by Murdock at Point Barrow, 1881–'83. Seebohm states that it arrived at Taimyr peninsula, 74° N., June 4, which is nearly the average date for Arctic stations in America.

The *Jeannette* crew observed a sanderling near Faddejew, New Siberian Islands, August 30, 1881.

No. 25. *Ægialitis hiaticula* (Linn.). Ringed Plover.

Feilden reports a specimen obtained August 4, 1875, in Twin Glacier Valley. Five plovers, evidently of this species, were found by Sergeant Linn, breeding on the banks of Very River, in the interior of Grinnell Land, about 81° 35′ N., 74° W., July 1, 1882.

This tends to confirm Newton's surmise, based on Nordenskiöld and Jewell seeing an example in 80° 45′ N., that possibly this is the most northerly shore bird.

No. 26. *Charadrius dominicus* (Mull.). *Charadrius virginicus dominicus;* Golden Plover.

This bird was seen by Mr. Henry Clay, an ardent sportsman, who was familiar with it, flying over the *Proteus*, near Cape Baird, August 7, 1881. It had been previously recorded, I believe, by Bessels, at Thank God Harbor, in 1872.

It has been recorded from Banks Land, Melville Island, and Port Bowen, as well as other stations in Arctic America.

No. 27. *Arenaria interpres* (Linn.). *Strepsilas interpres;* Turnstone.

Turnstones were quite abundant and bred near Fort Conger in 1882 and 1883. In 1876 it was first seen by Markham, on May 27, near Cape Henry. The earliest specimen observed by us was seen by Sergeant Brainard, June 2, 1883, at Cape Baird. September 11, 1875, a flock was seen near Depot Point, about 82° 45′ N. The young were able to fly by July 9.

Kumlien, in 1877-'78, saw no turnstones in Cumberland Sound, but the natives knew the bird. It was not recorded at Port Bowen, nor Banks Land, but has been from Melville Island and Boothia Felix.

No. 28. *Lagopus rupestris* (Gmel.). Rock Ptarmigan.

This is the only Greenland ptarmigan which is common to the whole country. It breeds in great abundance on the Parry Islands, and is found thence southwestward to Point Barrow, where it is a rare species. This bird is no doubt a winter habitant of Grinnell Land. Traces were seen of it near Floeberg Beach, September 29, 1875, and a specimen was obtained in Discovery Harbor (Fort Conger), October, 1875. Seven were seen by us, October 2, 1881, all in perfect winter plumage, and a single specimen, October 12, 1882. It was observed at Floeberg Beach, 82° 27′ N., March 11, 1876, at Thank God Harbor, March 24, 1872, and killed in Discovery Harbor, April 10, 1876. The earliest seen by us were four in winter plumage, March 9, 1882, in Newman Bay. One was killed on the shores of Lake Hazen, where they were abundant, April 30, 1882. Traces were found by Aldrich at Cape Columbia, 83° 06′ N., and the bird was killed by Lieutenant Lockwood near Cape Benét, 83° 03′ N., on the North Greenland coast, May —, 1882, and traces were noticed in 83° 24′ N., at Lockwood Island. It was also the bird seen by me farthest in the interior of Grinnell Land, near Mount Arthur, July 2, 1882. Tracks were seen at Life-Boat Cove, February 7, 1873, and at Camp Clay, March 11, 1884, where three days later several were killed.

Hayes obtained frequent specimens near Cape Parry, up to October 9, 1854.

Feilden killed a female in full summer plumage, May 29, 1876, in 82° 46′ N.

In Cumberland Sound, the single specimen obtained by Kumlien had its crop crammed full of sphagnum moss.

On July 20, 1877, Seebohm shot a rock ptarmigan "on the Yen-e-say, in latitude 71° 30′ N., the first record of that species mainland of the palæarctic region. Beyond this we have no further particulars of its range. This discovery leads to the supposition that it is a circumpolar bird."

It is interesting to recall that Nordenskiöld found such traces of the ptarmigan on the inland ice of Greenland, or to indicate that these birds visit it in no inconsiderable numbers.

No. 29. *Haliaëtus albicilla* (Linn.). White-tailed Eagle, or Gray Sea-Eagle.

This eagle is one of the birds which was not expected in Smith Sound, never having been reported as far north as Littleton Island. Indeed, McClintock says that previous to 1857 only two eagles had been seen in twenty years. One Eskimo from Proven, only fifty miles south of Upernivik, knew the bird well, and said it was not an uncommon visitor. Newton says its northern range is not as yet determined. A specimen was seen by Lieutenant Lockwood, April 4, 1882, in Shift-Rudder Bay, near Cape Beechey, about 81° 55′ N. It was identified by Eskimo Christiansen, who knew the bird well, and who instantly gave it the Eskimo names (Nektoralik and Tertersoak). The eagle was evidently a straggler, and was the first bird except the ptarmigan, seen that year. The same bird was probably seen by Lieutenant Kislingbury near Fort Conger seven days later; it being, he said, "a hawk or an eagle." Sergeant Gardiner, who heard the bird, said that its scream was that of an eagle. Lieutenant Lockwood saw a second example, April 18, 1882, at the head of Lost River, near Repulse Harbor, about 82° N., 58° W.

Kumlien reports this eagle at Cumberland Sound in October, 1877, and nesting the following spring.

No. 30. *Falco islandus* (Brunn.). *Falco candicans;* Greenland Falcon, or Gyrfalcon.

The Greenland falcon was probably seen by the Polaris Expedition about May 22, 1872. Mr. Hart noticed these birds nesting in cliffs near Cape Hayes, 79° 42′ N., and a falcon was seen near Cape Frazer, 79° 44′ N., August 24, 1876. The latest specimen in Smith Sound was recorded by Hayes during his boat journey on Northumberland Island, near Cape Alexander, September 10, 1854. We saw an example August 4, 1881, just north of Carl Ritter Bay, and another near Fort Conger, on July 30, 1882; the attention of Sergeants Jewell and Ralston being called to the latter through the great alarm shown by the Buffon's skuas in their vicinity. Three falcons were seen, August 13, 1882, in the valley at the head of St. Patrick Bay, about 81° 55′ N., attracted by offal. They were observed in the same locality August 15, and a pair of them flew around Fort Conger two days later.

No. 31. *Nyctea nyctea* (Linn.). *Nyctea scandiaca;* Snowy Owl.

The snowy owl is a common and early migrant to Grinnell Land, and delays until the late autumn. Lieutenant Parry noted an example as early as March 29, 1876, near Floeberg Beach, and one was seen by us at

Fort Conger, October 17, 1882, and by Hall, at Thank God Harbor, *about* October 20, 1871. On May 20, 1884, an owl (?) flew northward over our hut near Cape Sabine. Major Feilden reports finding a pair in Grinnell Land, breeding June 20, 1876, 82° 40′ N.; probably the most northerly of this species. The snowy owl bred abundantly in the vicinity of Fort Conger, and as many as fifteen or twenty fine young birds were raised in 1882 and kept by us until approaching winter compelled us to release them. A nest near Fort Conger resembled that described by Major Feilden, which was "a mere hollow scooped out of the earth, and situated on the summit of an eminence which rose from the center of the valley." In this case a few feathers and a little grass were present. Our observations agreed with that officer's to the effect that the food of this bird seems to consist entirely of the lemming. Nelson has noticed that the abundance of the owl in spring and summer near Point Barrow appears to depend upon the presence of its favorite food, the lemming. A specimen killed by us, September 9, 1882, was 4 feet 8½ inches [1.436^{m}] between the extreme tips of the wings, and weighed only three pounds and fifteen ounces. Eggs were obtained May 25, 1882, and the young on July 8.

The first bird seen in 1882 by Leigh Smith, in Franz Josef Land, was an owl, on February 8. Lamont mentions seeing an owl of this species 180 miles from Lapland, the nearest coast.

No. 32. *Corvus corax sinuatus* (Wagl.). *Corvus corax;* Raven.

Dr. Coppinger observed a pair of ravens nesting at Cape Lupton, July, 1876, which Feilden considers its most northern settlement. This point was probably a favorite nesting-place, as the Polaris saw a specimen near there July 20, 1872.

The raven was but occasionally seen in the neighborhood of Fort Conger. On September 28, 1882, Private Biederbick shot a fine specimen, in good condition, which weighed four pounds and twelve ounces, and was four feet four and a half inches [1.333^{m}] from tip to tip of wings.

It is probable that the raven breeds and winters in the immediate vicinity of Cape Sabine, as specimens were seen near Polaris house, Life-Boat Cove, late in November, 1872, and on January 30 and February 15, 1873. At Sabine a raven remained with us until some time in November, 1883, and reappeared February 20, 1884. Dr. Moss, R. N., obtained a specimen August 29, 1876, in Dobbin Bay. A young raven was killed by Hayes on Northumberland Island September 11, 1854.

No. 33. *Plectrophenax nivalis* (Linn.). *Plectrophanes nivalis;* Snow-Bunting.

This is said by Pansch to be the most common land-bird on the eastern coast of Greenland, and the same remark applies to it in Grinnell Land. Murdoch also found it the commonest bird at Point Barrow, where the first bird, a male in full breeding plumage, appeared April 9, 1882. By coincidence in 1883 the snow-bird came ten days later than the preceding year at both Point Barrow and Fort Conger. The bird remains late in Grinnell Land, as Feilden, on August 28, 1875, observed near Cape Union a flock of about eighty, and on May 13, 1876, saw one at Depot Point, 82° 30′ N.

A specimen, evidently a straggler, was seen by the Polaris party at Thank God Harbor March 14, 1872, which is three weeks earlier than any other recorded example in a high latitude, April 3, 1873, at Mussell Bay, Spitzbergen. The first at Conger appeared April 14, 1882, and was ten days later the following year. The first bird near Cape Sabine was seen April 13, 1884, in Rice Strait by Sergeant Frederick, and one was heard singing at Camp Clay the same day. The last observed by Feilden at Floeberg Beach was September 14, 1875. Kane at Van Rensselaer Harbor reported the last seen November 4, 1853, and the first on May 1, 1854. Feilden found the species nesting by May 30, 1876, in 82° 33′ N., and Lieutenant Parr saw one near the eighty-third parallel. Lieutenant Lockwood and Sergeant Brainard saw several specimens at 83° 24′ N., May 13–15, 1882, and numerous others to the southward. Eggs, nests, and young, were obtained by us.

In 1876 a snow-bunting was seen August 29 in Dobbin Bay, and on September 18, 1876, in 73° N., migrating to the south. Kumlien in 1878, at Cumberland Gulf, saw one April 5 and none again until May 8. "They move southward," he says, "with the first snows of September." At one time he noted snow-buntings 200 miles at sea, off Cape Chidly.

No. 34. *Saxicola œnanthe.* Stone-Chat or Wheat-Ear.

This is one of the stragglers not expected in Smith Sound. Newton says it was seen by James Ross, May 2, 1830, in Felix Harbor, 70° N., 92° W. A wheat-ear was observed, July, 1876, near Port Foulke, about 78° 15′ N., by Dr. Horner in yacht *Pandora.*

The stone-chat was seen at Point Barrow from May 19–22, 1882.

Young wheat-ears, says Feilden, were able at Ritenbenk to fly by July 16, 1875.

Kumlien says: "It [the wheat-ear] breeds on both shores of Cumberland Sound and on the west coast of Davis' Straits, but rare," and that the Eskimo from Nugamente and Frobisher Straits said they bred there in small numbers.

No. 35. *Urinator adamsii* (Gray). *Colymbus torquatus* var. *adamsii;* Great Northern Diver.

This bird Newton does not class as probable in Smith Sound. I include it in the list, it being a possible straggler, as Kumlien reports it as breeding in Cumberland Sound. Hayes, in his "Boat Journey," speaks of the great northern diver as seen June 18 and September 20, 1854. Whether he mistook this bird for the red-throated diver or not is uncertain.

In favor of his correctness it may be recalled that Osborn saw the "great northern diver" in Booth Sound, 76° 52′ N., August 21–25, 1851.

Feilden mentions that it was recorded at Walker Bay in June, 1852, and Sir Alexander Armstrong notes their presence at Mercy Bay the same month.

Back saw this diver, with young, August 3–4, 1834, at Montreal Island, 67° 47′ N., 95° W., and Richardson records that great northern divers were going southeast, near Cape Bathurst, 69° 30′ N., August 17, 1848.

They pass Fort Franklin and Martin's Falls regularly each year on their way north, passing the former place from May 1–6 (occasionally earlier), and are scarce at the latter place by May 12.

No. 36. *Stercorarius pomarinus* (Temm.). *Stercorarius pomatorhinus;* Pomatorhine Skua, or Pomarine Jaeger.

This skua was not observed by us. This is somewhat surprising, as Newton says it is the commonest species of skua in the north inspectorate of Danish Greenland.

No. 37. *Rhodostethia rosea* (Macgil.). Ross' Gull.

No specimen of this rare bird was seen by us in Smith Sound. The observations of Murdoch at Point Barrow show that this bird in thousands passes over that point to the northeast during October, none of which were ever seen to return. He says: "They appeared to come in from the sea to the west or northwest, and travel along the coast to the northeast."

De Long reports them as seen in 71° 50′ N., 177° W. in 1879; and the year following from June 22 to 30, in 72° 20′ N., 178° E.

No. 38. *Mergus serrator* (Linn.). Red-breasted Merganser.

This bird was not seen by us on any of the preceding expeditions in Smith Sound or northward, although considered by Newton as a possible migrant. No expedition in Arctic America has recorded it, and though it breeds in Cumberland Gulf, at the edge of the Arctic Circle, it is not common, says Kumlien.

Seebohm questions its occurrence in Greenland as far north as 73°, though Kumlien, without giving further particulars, says it is "found on the Greenland coast to 73° N. latitude at least, and probably farther."

No. 39. *Crymophilus lobatus* (Linn.). *Phalaropus hyperboreus;* Northern Phalarope.

The red-necked phalarope, which Newton says is the commonest species in Greenland, was not observed by us.

Fencker says that this phalarope breeds farther north in Greenland than the gray (or red) phalarope; nevertheless the latter bird was recorded north of the eighty-first parallel in 1876, 1882, and 1883.

No. 40. *Squatarola helvetica* (Linn.). Gray Plover, or Black-bellied Plover.

The gray plover was not seen by us, nor has it been recorded in Smith Sound, although it is a possible species according to Newton.

Murdoch reports it as rare; a few seen in 1882 at Point Barrow, but none in 1883.

List of birds observed to the northward of latitude 81° 30′ *N., in Greenland and Grinnell Land,* 1871–'72, 1875–'76, *and* 1881–'83.

No.	Species.	Common name.	Also found in			Years seen.	Earliest date seen.	Average date (in years) of arrival.		Last seen.
1	Urinator lumme	Red-throated diver	Z	S	B	2	June 18, 1883			Sept. 2, 1875
2	Cepphus mandtii	Dovekie		S	B	5	Feb. 28, 1872	3	June 3	After Sept. 1, 1875.
3	Uria troile, or lomvia	Murre	Z	S	B	1	1872			
4	Alle alle	Little auk	Z	S		1	1872			
*5	Stercorarius parasiticus	Parasitic jaeger	Z	S	B	2	June 18, 1883			
6	Stercorarius longicaudus	Long-tailed jaeger		S	B	6	June 3, 1882	4	June 7	Aug. 30, 1882
7	Gavia alba	Ivory gull	Z	S	B	4	May 28, 1876	2	June 5	Sept. 1, 1875
8	Rissa tridactyla	Kittiwake	Z	S		3	June 21, 1883			Sept. 12, 1871
9	Larus glaucus	Glaucous gull	Z	S	B	6	June 5, 1883	4	June 10	Sept. 6 (?), 1871.
*10	Larus leucopterus	Iceland gull	Z			2	May 19, 1882	2	May 28	
*11	Xema sabinii	Sabine's gull		S	B	2	July 6, 1882			
12	Sterna paradisæa	Arctic tern	Z	S	B	6	Juue 16, 1876	3	June 18	Aug. 26, 1875
*13	Fulmarus glacialis	Fulmar	Z	S		2	June 26, 1876			
14	Clangula hyemalis	Old squaw	Z	S	B	5	June 6, 1883	2	June 12	Sept. 16, 1875
15	Somateria mollissima	Eider	Z	S		6	June 4, 1872	3	June 16	Sept. 7, 1881
16	Somateria spectabilis	King eider	Z	S	B	6	June 11, 1883	3	June 13	
*17	Chen hyperborea nivalis	Lesser snow-goose			B	1	June 12, 1882			
18	Branta bernicla	Brant	Z	S		5	June 3, 1882	4	June 7	Sept. 6, 1871
*19	Grus canadensis	Little brown crane			B	1	June 23, 1883			
20	Crymophilus fulicarius	Red phalarope		S	B	2	June 18, 1876	2	June 19	
21	Tringa canutus	Knot			B	5	June 3, 1883	3	June 6	Aug. 29, 1875
22	Tringa maritima	Purple sand-piper	Z	S		3				About Sept. 3, 1871.
23	Calidris arenaria	Sanderling	Z			3	June 4, 1876			Aug. 31 (?), 1882.
24	Ægialitis hiaticula	Ringed plover	Z	S		1	July 1, 1882			
*25	Charadrius dominicus	Golden plover			B	1				Aug. 7, 1881
26	Arenaria interpres	Turnstone	Z		B	6	May 27, 1876	3	June 1	Sept. 11, 1875
27	Lagopus rupestris	Rock ptarmigan			B	7	Mar. 9, 1882		(†)	Oct. 12, 1882
*28	Haliætus albicilla	Gray sea-eagle	Z			1	April 4, 1882			
29	Falco islandus	Gyrfalcon	Z	S	B	‡2	May 22, 1872			About Oct. 20, 1871.
30	Nyctea nyctea	Snowy owl	Z	S	B	7	Mar. 29, 1876	4	Apr. 25	Oct. 20, 1871
31	Corvus corax sinuatus	Raven				3	June 19, 1872		(?)	Sept. 28, 1882
32	Plectrophenax nivalis	Snow-bunting			B	7	Mar. 14, 1872	§4	May 2	Sept. 14, 1875
			21	21	21					

Explanations: Z, for Nova Zembla; S, for Spitzbergen; B, for Point Barrow.

* Straggler. † A winter denizen. ‡ Seen four years north of 79° 43′. § Not included in average earliest arrival.

Table showing earliest and latest dates on which birds

No.	Species.	English name.	Parry's first expedition, Winter Harbor, 1819–'20.	Parry's second expedition, 1821–'23.
1	Urinator lumme	Red-throated Diver	July 9, 1820	Sept. 14, 1821[a] June 14, 1823[b]
2	Fratercula arctica	Puffin		
3	Cepphus mandtii	Dovekie	Aug. 1 and 13, 1819 Aug. 8, 1820	Dec. 1 and 13, 1821 Jan. 25, 1822[d] Mar. 25, 1822[a] Mar. 22, 1823[b]
4	Uria troile	Murre	Early June, 1820 (?)	Sept. 13, 1821[a] June —, 1822[a] Aug. 4, 1822[a]
5	Alle alle	Little Awk, Rotge		
6	Stercorarius parasiticus	Common Skua	Yes[a]	
7	Stercorarius longicaudus	Buffon's Skua		June 16, 1822[a]
8	Gavia alba	Ivory Gull	Rare[a]	
9	Rissa tridactyla	Kittiwake	Aug. 7, 1819 Rare	
10	Larus glaucus	Glaucous Gull	Sept. 5, 1819 Mar. 20, 1820 Aug. 25, 1820	Sept. 21, 1821[a] Sept. 26, 1822[b]
11	Larus leucopterus	Iceland Gull		
12	Xema sabinii	Sabine's Gull	Aug. —, ——	June 29, 1822[a] Aug. 5, 1822[a]
13	Sterna paradisæa	Arctic Tern	Sept. 5, 1819 July 8, 1820	June 24, 1822[a] July 2, 1823[b]
14	Fulmarus glacialis	Fulmar	Aug. 4, 1819	
15	Clangula hyemalis	Long-tailed Duck	Sept. 19, 1819 June —, 1820 June 22, 1820	Oct. 4, 1821[a] June 21, 1822[a] May 4 (?), 1822[a] Oct. 4, 1822[b] May 21, 1823[b]
16	Somateria molissima	Eider	Aug. 13, 1819	Sept. 14, 1821[a] About May 30, 1822[a]
17	Somateria spectabilis	King Eider	Sept. —, 1819 June 22, 1820 Aug. 25, 1820	May 30, 1822[a] Apr. 16, 1823[b]
18	Chen hyperborea nivalis	Greater Snow-Goose		June 24, 1823[b]
19	Branta bernicla	Brent Goose, Brant	June 6, 1820	June 19, 1822[a] June 14, 1823[b]
20	Grus canadensis	Little Brown Crane		June 25, 1823[b]
21	Crymophilus fulicarius	Gray Phalarope	June 2, 1820 (?)	June 29, 1822 (?)[a]
22	Tringa canutus	Knot	Yes[a]	Aug. 17, 1822[a] June 16, 1823[b]
23	Tringa maritima	Purple Sandpiper	No	June 10, 1822[a] June 14, 1823 (?)[b]
24	Calidris arenaria	Sanderling	Yes	June 16, 1823[b]
25	Ægialitis hiaticula	Ringed Plover	July 31, 1819	May 31, 1822[a]

[a] Winter Island.
[b] Igloolik.
[c] Cambridge Bay.
[d] At Leopold Island, Prince Regent Inlet.
[e] Walker Bay.
[f] First gulls in these years.
[g] Gulls, sp. ?, Sept. 23, 1850, Sept. 10, 1851.
[h] First gulls, sp. ?

have been observed at various Arctic stations.

Parry's third expedition, Port Bowen, 1824–'25.	Ross' expedition, Boothia Felix, 1829–'33.	Collinson's expedition, 1851–'54.	McClure's expedition, Princess Royal Island and Mercy Bay, 1851–'53.	Ray's expedition, Point Barrow, 1881–'83.	No.
	Yes	June, 1853[e]	June 23, 1852	May 22, 1882	1
					2
June —, 1825	—, 1832 Feb. —, 1833			Dec. 2, 1882	3
Early June, 1825	(?)			Dec. 9, 1882	4
	(d)				5
(?)	Yes	(?)[e]	May 31, 1852	May 30, 1882	6
(?)	Yes	July —, 1853[e]		End May End August	7
Before June 14, 1825	Sept. 21, 1829, very rare	Yes[e]		Early spring Late autumn	8
Spring, 1825	Yes		June 8, 1851		9
June 11, 1825	Sept. 28, 1829 Apr. 19, 1830[f] June 8, 1831[f] About Apr. 25, 1832[f] Sept. 29, 1832[f] After Apr. 30, 1833[f]	June —, 1853[e]	Sept. 13, 1850 June 8, 1851[g] May 27, 1851[h] May 31, 1852 About June 1, 1853	Middle Nov. 1881 May 2, 1882 Nov. 1, 1882	10
	Yes	—, 1853[e]			11
(?)	—, 1830	June —, 1852[e] June —, 1853[e] May 13, 1854[i]		End Oct., 1881 June 28, 1882 Aug. 3, 1882, last July and Aug., 1883	12
(?)	Yes	—, 1851[e] —, 1852[e] July —, 1853[e]		About June 10, — June 29, 1882 About Aug. 31, 1882	13
(?)	Aug. 9, 1829[j]	(?)[e]	Sept. 7, 1850[k]		14
Oct. 13 (?), 1824 Early June, 1825	"Ducks," June 12, 1830 Sept. 11, 1830 June 20, 1831 After June 25, 1832 Sept. 29, 1832 About June 16, 1833	June —, 1852[e] June —, 1853[e] Oct. 26 (?), 1853[i]	Aug. 16, 1850 Aug. 19, 1851 June 13, 1852[l]	Middle May, — Dec. 9, 1882	15
Early June, 1825			Sept. 7, 1850[m] June —, 1852		16
	June 21, 1830	June —, 1852[e] July —, 1853[e]	Aug. 19, 1851 June —, 1852	Apr. 27, 1882 Dec. 2, 1882 May 5, 1883 End Oct., 1883	17
		Yes[e] (?)[e] May 15 (?), 1854[i]	Sept. 7, 1850 May 31, 1851 Aug. 19, 1851 May 31, 1852	Middle May	18
No	June 12, 1830 June 20, sp.? 1830 About June 16, 1833		June —, 1852[n]		19
No	June 4, 1830	Oct. —, 1851[e] Before June 6, 1852[e]	Middle Aug., 1850[o] May —, 1852	June 20, 1883	20
No	Yes		About June 3, 1852	June 4, 1882 Oct. 25, 1882	21
No		July 9, 1853[e]		June 11, 1882 July 5, 1882, last	22
Early June, 1825	—, 1830 July, 1831 July, 1832	June 10, 1853[e]	About June 3, 1852		23
No		June 9, 1852[e]	Aug. 30, 1850 June 7, 1851 About June 3, 1852		24
No					25

[i] Camden Bay.
[j] In Prince Regent Inlet.
[k] Possibly *F. Rodgersii;* Pacific form.
[l] "Ducks," sp.? ; Sept. 23, 1850 ; June 7, 1851 ; Sept. 27, 1851.
[m] Probably var. *V. nigra.*
[n] Probably var. *nigricans.*
[o] Near Return Reef.

Table showing earliest and latest dates on which birds

No.	Species.	English name.	Parry's first expedition, Winter Harbor, 1819–'20.	Parry's second expedition, 1821–'23.
26	Charadrius dominicus	Golden Plover	June 13, 1819 Sept. —, 1819 June 3, 1820	Aug. 7, 1821 [a] June —, 1822 (?) [a] June 14, 1823 [b]
27	Arenaria interpres	Turnstone	Yes	June 14, 1822 [a]
28	Lagopus rupestris	Rock Ptarmigan	Oct. 15, 1819 May 12, 1820	Nov. 16, 1822 [a]
29	Haliætus albicilla	White-tailed Eagle		
30	Falco islandus	Greenland Falcon		Oct. 5, 1822 (?) [b]
31	Nyctea nyctea	Snowy Owl	Feb. —, 1820 Mar. 20, 1820 May —, 1820 Aug. 25, 1820	No owls [a]
32	Corvus corax sinuatus	Raven	Aug. 15, 1819 June 3, 1820 July 20, 1820	Aug. 22, 1821 [a] Mar. 25, 1822 [a] About Oct. 31, 1822 [b]
33	Plectrophenax nivalis	Snow-Bunting	Sept. 8, 1819 June 2, 1820 (?) Aug. 15, 1820	Apr. 27, 1822 [a] Sept. 1, 1822 [a] May 22, 1823 [b]
34	Saxicola œnanthe	Stone-Chat		
35	Urinator imber	Great Northern Diver		
36	Stercorarius pomarinus	Pomarine Jaeger	Yes	June 10, 1823 [b]
37	Rhodostethia rosea	Ross' Gull		July 2, 1823 [b]
38	Merganser serrator	Red-breasted Merganser		
39	Phalaropus lobatus	Northern Phalarope		
40	Charadrius squatarola	Grey Plover		Aug. 17, 1821 [a]
41	Colymbus arcticus	Black-throated Diver		June 28, 1822 [a] June 14, 1823 [b]
42	Larus argentatus	Herring Gull, Common Gull	Aug. 22, 1819 June 23, 1820	Sept. 14, 1821 [a] May 4, 1822 [a] About Apr. 17, 1823 [b]
43	Cygnus	Swan		

[a] Winter Island.
[b] Igloolik.
[c] Walker Bay.
[d] Cambridge Bay.
[e] Camden Bay.

have been observed at various Arctic stations— Continued.

Parry's third expedition, Port Bowen, 1824–'25.	Ross' expedition, Boothia Felix, 1821–'33.	Collinson's expedition, 1851–'54.	McClure's expedition, Princess Royal Island and Mercy Bay, 1851–53.	Ray's expedition, Point Barrow, 1881–'83.	No.
Middle May, 1825	June 4. 1830 June 22, 1831	June 10, 1852[c] —— —, 1853[d]	June 7, 1851 About June 3, 1852	May 21, 1882 Aug. 31, 1882 —— —, 1883	26
No	——, 1830 Middle June, 1832	June, 1853[d]		June 4, 1882 Aug. 30, 1882	27
	All the year		All the year	All the year	28
No					29
No	Aug. and Sept., 1832 (?)		Sept. 5, 1851	Autumn, 1882–'83	30
Yes	Occasionally through winter, 1831–'32.	(?)[e]	May 10, 1851 Sept. 18, 1851 March 1, 1852 Mid-winter, 1852–'53	All the year, 1883	31
All winter	All the year	Mar. 16, 1852[c] Nov. 13, 1853[d] May 7, 1854[e]	All winter, 1852–'53		32
Sept. 24, 1824 Middle Apr., 1825	Aug. 27, 1829 Apr. 17, 1831 After Apr. 30, 1832	May 10, 1852[c] Apr. 10, 1854[e]	Sept. 7, 1850 Apr. 27, 1851 Apr. 20, 1852	Apr. 9, 1882 Sept. 20, 1882 Apr. 19, 1883	33
	May 2, 1830			May 19 and 22, 1882	34
	June 20, 1830	June —, 1852[c]	Aug. 30, 1850 June 13, 1852	——, 1882[f] End May, 1883	35
(?)	Yes	June —, 1853[d]			36
No	1830			Sept. 28, 1881 Oct. 22, 1881 Sept. 10, 1882 Oct. 9, 1882 June 10, 1883[g]	37
					38
No		June 15, 1852[c] Yes[d]		June 11, 1883	39
				—— —, 1882	40
No	Yes	June, 1852[c] June, 1853[d]	June, 1852	June 7, 1882[h] Oct. —, 1882	41
July —, 1825	Yes	About June 11, 1852[c] July —, 1853[d]	June 8, 1851 May 31, 1852 About June 1, 1853		42
		——, 1852[c] ——, 1853[d]		([i])	43

[f] Var. *Adamsi.*
[g] Seventy miles NW. of Point Hope.
[h] Var. *Pacificus.*
[i] Whistling Swan, Trumpeter, east of Fort Yukon.

Table showing earliest and latest dates on which birds have

No.	Species.	English name.	McClintock's expedition, Port Kennedy, 1859.	Nordenskiöld and others, Spitzbergen.
1	Urinator lumme	Red-throated Diver	Yes	
2	Fratercula arctica	Puffin		
3	Cepphus mandtii	Dovekie	Feb., 1859	About May 24, 1861[a] Oct. 2, 1868[b] End Oct., 1872 Mar. 4, 1873
4	Uria troile	Murre		
5	Alle alle	Little Awk, Rotge		About May 24, 1861[a] Sept 24, 1868[e] Oct. 2, 1868[b]
6	Stercorarius parasiticus	Common Skua		
7	Stercorarius longicaudus	Buffon's Skua		
8	Gavia alba	Ivory Gull	Prince Regent Inlet	May 23, 1861[b] Oct. —, 1872
9	Rissa tridactyla	Kittiwake	Pond's Bay	May 23, 1861[b]
10	Larus glaucus	Glaucous Gull		May 23, 1861[b] Sept. 20, 1868[b] Mar. 3, 1873
11	Larus leucopterus	Iceland Gull		
12	Xema sabinii	Sabine's Gull		
13	Sterna paradisæa	Arctic Tern	Cape Warrenden	
14	Fulmarus glacialis	Fulmar	Yes	May 23, 1861[b] Oct. 2, 1868[b] Nov. 30, ——[g]
15	Clangula hyemalis	Long-tailed Duck	——, 1859	2 at Mussel Bay
16	Somateria molissima	Eider		End Oct., 1872
17	Somateria spectabilis	King Eider	Yes	
18	Chen hyperborea nivalis	Greater Snow-Goose	June, 1859	
19	Branta bernicla	Brent Goose, Brant		May 23, 1861[b]
20	Grus canadensis	Little Brown Crane	Pond's Bay, July, ——	
21	Crymophilus fulicarius	Gray Phalarope		
22	Tringa canutus	Knot		
23	Tringa maritima	Purple Sandpiper		
24	Calidris arenaria	Sanderling		
25	Ægialitis hiaticula	Ringed Plover		Found by —— ——, 80° 45′ N.
26	Charadrius dominicus	G[illegible]en Plover	June, 1859	
27	Arenaria interpres	Turnstone		
28	Lagopus rupestris	Rock Ptarmigan	All the year	Mar. 4, 1873

[a] Near Bell Sound, going north.
[b] Near Amsterdam Island.
[c] Nesting in Henrietta Island.
[d] Nesting in Bennet Island.
[e] 78° 20′ N.; 2° 17′ W.
[f] 77° N.; 151° E.
[g] Rare, but seen at intervals during winter.
[h] About 81° N.

been observed at various Arctic stations—Continued.

Sunderland, Belcher, and McCormick, near Wellington Channel.	Howgate, Cumberland Sound.	Wohlgemuth, Jan Mayen.	Weyprecht and Smith, Franz Joseph Land.	Jeannette expedition.	No.
Aug. 28, 1852 Aug. 1, 1853	Late June, 1878	Autumn 1882 June 10, 1883	About Sept. 9, 1873 Apr. 7, 1874 Mar. 9, 1882		1
	None	Beginning of Sept., 1882. May 23, 1883			2
June 3, 1851 Sept. 28, 1852	All winter	Dec. 6, 1882 Apr. 21, 1883	Feb. 18, 1882	May 4, 1880 June 3, 1881[c]	3
	—, 1878	Oct. 11, 1882 Jan. 15, 1883		July 16, 1881[d]	4
	None	Dec. 23, 1882 Jan. 13, 1883	June —, 1873 About Sept. 9, 1873 Apr. 7, 1874 Mar. 2, 1882	July 12, 1881[f]	5
Sept. 2, 1852	Early 1878	June 2, 1883	June —, 1873 Sept. 9, 1873		6
	June —, 1878	July —, 1883	June —, 1873 Sept. 9, 1873		7
Sept. 5, 1852	Autumn 1877 None 1878	May 3, 1883	May 24, 1874 Oct. 28–30, 1881 Apr. 20, 1882	Sept. 17, 1879	8
June 28, 1851 Sept. 2, 1852	Autumn 1877 None 1878	Feb. 20, 1883[g]	May 6, 1882		9
May 16, 1851 Sept. 5, 1852	Apr. 20, 1878 First to arrive	Dec., 1882 Jan. 27, 1883[i]	May 24, 1874 Oct. 28–30, 1881 Mar. 5, 1882		10
June 21, 1853; breeding	—, 1878	All winter, 1882–'83			11
June 6, 1851	Oct. 6, 1877 One pair only[j]	Straggler, —, 1883			12
June 13, 1851 Aug. 29, 1852	June 19 and 20, 1878, *only.*	—, 1883			13
Aug. 23, 1850 May 23, 1851 Sept. 2, 1852	Middle Oct., 1877 —, 1878	Dec. 19, 1882 Jan. 18, 1883[l]	Sept. 9, 1873 Oct. 28–30, 1881 Apr. 22, 1882	July 16, 1881[m]	14
July 11, 1851	Late May, 1878 One all winter	Dec. 7, 1882			15
Sept. 23, 1850 May 17, 1851 Sept. 3, 1852	Till Nov. 17, 1877 Apr. 30, 1878	Dec. 6, 1882 April 8, 1883		Oct. 6, 1879; sp.? July 3, 1880; sp.? May 4, 1881; sp.? May 14, 1881	16
June 9, 1851	June 20, 1878 Oct. —, 1877, half-grown	Aug., 1882			17
					18
June 1, 1851 Sept. 6, 1852 June 2, 1853 After June, 1854		May 23, 1883	June 3, 1882		19
	—, 1878 G. Fraterculus?				20
	First, Aug. 4, 1877, in 41° N., 68° W.				21
	Only in Nov., 1877				22
Aug. 28, 1852; sp.? Aug. 23, 1852; sp.?; young.	Nov. —, 1877 June —, 1878	Sept. —, 1882 End May, 1883			23
	Sept. *only*, 1877	Middle Oct., 1882 May, 1883	Apr. 11, 1873	Aug. 30, 1881[n]	24
June 6, 1851; sp.?	—, 1878	Sept. —, 1882 May —, 1883			25
					26
	Not seen but known	Sept. —, 1882 May 27, 1883			27
	—, 1878				28

[i] Young at intervals all winter.
[j] Near Kikastan Island.
[k] Bear Island.

[l] All winter at intervals.
[m] 76° 41′ N.; 154° E.
[n] Near Faddejew.

Table showing earliest and latest dates on which birds have

No.	Species.	English name.	McClintock's expedition, Port Kennedy, 1859.	Nordenskiöld and others, Spitzbergen.
29	Haliætus albicilla	White-tailed Eagle		
30	Falco islandus	Greenland Falcon		
31	Nyctea nyctea	Snowy Owl	Yes	
32	Corvus corax sinuatus	Raven	All the year	
33	Plectrophenax nivalis	Snow-Bunting	May 26, 1859	Apr. 3, 1873
34	Saxicola œnanthe	Stone-Chat		
35	Urinator imber	Great Northern Diver	Yes	
36	Stercorarius pomarinus	Pomarine Jaeger		
37	Rhodostethia rosea	Ross' Gull		
38	Merganser serrator	Red-breasted Merganser		
39	Phalaropus lobatus	Northern Phalarope		
40	Charadrius squatarola	Grey Plover	(?)	
41	Colymbus articus	Black-throated Diver	Aug., 1859	
42	Larus argentatus	Herring Gull, Common Gull	Yes	
43	Cygnus	Swan		

been observed at various Arctic stations—Continued.

Sunderland, Belcher, and McCormick, near Wellington Channel.	Howgate, Cumberland Sound.	Wohlgemuth, Jan Mayen.	Weyprecht and Smith, Franz Joseph Land.	Jeannette expedition.	No.
	Sept., 1877 Spring 1878				29
	One only, late Nov. 1877	Apr. 9, 1883	Apr. 20, 1882		30
June 2, 1853	Oct., 1877	All winter	Feb. 8, 1882	Aug. 31, 1881	31
Apr. 17, 1851 Nov. 24, 1852 Sept. 6, 1852	All winter			Sept. 14, 1880; sp.? Apr. 9, 1881; sp.?	32
Sept. 14, 1850 Apr. 19, 1851 June 2, 1853	Apr. 5, 1878 May 8, 1878	Oct. 31, 1882 Feb. 18, 1883	Sept. 28, 1873 May —, 1874		33
	—, 1878	May 4, 1883			34
	Common 1878				35
	No; but on west shore Davis Strait.	Aug. 10, 1882			36
			Sept. 28, 1873	—, 1879 June 22 and 30, 1880*.	37
	July —, 1878				38
	June —, 1877				39
					40
	June 24, 1878	Dec. 8, 1882 May 24, 1883			41
June 6, 1851 Sept. 8, 1852	June 20, 1872; shot	May 23, 1883			42
					43

*72° 20′ N., 178° E.

MEDUSÆ.

APPENDIX No. 132.

By J. WALTER FEWKES.

The following report* is based on notes and sketches of Medusæ made by members of the expedition. No specimens were examined, and in some cases it has been impossible for me to determine the character of the jelly-fishes collected. A comparison with notes on other Medusæ known to inhabit these regions has led me to hazard a conjecture in regard to genera observed by the members of the expedition. The majority of the animals here mentioned were found by Lieutenant Greely in Discovery Harbor, latitude 81° 44′ N., longitude 64° 45′ W. It was my intention to have made this final report a monograph of Arctic jelly-fishes. This work, very much needed, I have been unable to prepare, but have added to the account of Medusæ here presented a few of the common jelly-fishes known to inhabit the high latitude of the Arctic.

ACRASPEDA.

The waters of the Arctic are inhabited by several genera of jelly-fishes destitute of a velum, many of which are found as far south as the coast of New England. Of these may be mentioned the following:

Cyanea Postelsii, Brandt; *Cyanea arctica*, Per. et Les.; *Aurelia flavidula*, Per. et Les.; *Aurelia labiata*, Cham. et Eysen; *Periphylla hyacinthina*, Steen.; *Callinema ornata*, Verr.; *Nauphanta polaris*, Fewkes; ? *Pelagia denticulata*, Brandt?; *Chrysaora melanaster*, Brandt; *Chrysaora heptæna*, Per. et Les.†

Cyanea arctica, Per. et Les.

This large and beautiful medusa has been recorded from several localities on the west coast of Greenland, and is found all along the coast of New England. In the Bay of Fundy specimens of this medusa are very large and abundant. Those from south of Cape Cod are smaller and less abundant. The species is probably cold water in its habitat, as the name implies. *C. Postelsii* is confined to the vicinity of Alaska.

Aurelia flavidula, Per. et Les.

A common Arctic medusa which reaches large dimensions in colder waters. Sparingly represented south of Cape Cod. Abundant in the Bay of Fundy and Massachusetts Bay. *Aurelia labiata*, Cham. et Eysen. Also occurs in the Arctic.

‡ *Periphylla hyacinthina*, Steen.

This genus and species found in the Gulf Stream is also found in the Arctic. It has never been recorded from the coast of New England although collected on Georges Bank.

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*A preliminary report on the Medusæ collected by the expedition has been published by Lieutenant Greely in Appendix XI, of Three Years of Arctic Service.

†This medusa is mentioned in A. Agassiz' list of Greenland Medusæ. Chrysaora is regarded by him as a synonym of Dactylometra.

‡The generic name, Carybdea, used in the Arctic Manual and elsewhere to designate this medusa, belongs to a very different jelly-fish which has never been recorded from the Arctic.

Callinema ornata, Verr.

This genus and species occurs in the cold waters of the Bay of Fundy and probably belongs to the Arctic fauna. It has been recorded only from Eastport, Me. The genus is referred by Hæckel to Phacellophora, to which it may belong, although it differs from the species of this genus yet described, and must retain the specific name *ornata*. *P. Camtschatica*, Brandt, also occurs in the Arctic.

Nauphanta polaris, Fewkes.

The genus Nauphanta differs from Periphylla, with which it would at first sight be confounded, by the possession of eight sense-bodies and eight tentacles, while Periphylla has four sense-bodies and twelve tentacles, three tentacles alternating with each pair of sense-bodies. It is possible that the medusa referred to Periphylla and that referred to Nauphanta are the same, but the sketch made by Sergeant Gardiner and the accompanying notes leave no doubt that the species observed by the Lady Franklin Bay party has eight tentacles. I copy from my original description of *N. polaris* the following account:

Two good drawings of a medusa with characters of the genus Nauphanta were made by Sergeant Gardiner. The jelly-fish from which they were drawn probably belongs to a new species, for which the name *Nauphanta polaris* is suggested. The genus Nauphanta was collected by the *Challenger* in the Southern Atlantic in March, 1876, at a great depth below the surface. It was first described by Hæckel ("Report on the Deep Sea Medusæ dredged by H. M. S. *Challenger*, during the years 1873–'76," Part I, by Ernst Hæckel; "Report on the Scientific Results of the Voyage of H. M. S. *Challenger*, during the years 1873–'76, Zoology," vol. iv, No. II, p. 102), and has not been recorded since its discovery up to the present. Hæckel's account is based on two specimens, both of which he ascribes to the deep sea, and places in a single species, *challengeri*. It is a remarkable fact in the geographical distribution of this genus that a second species, or that described in this report, not only lives in northern latitudes but at or very near the surface of the ocean.* From the notes I learn that the medusa was captured on April 25.

The genus Nauphanta is a characteristic one, and is remarkable in the peculiar sculpturing of the exumbrella, the division of the umbrella on the exumbral side into a central and coronal or peripheral zone, and the possession of eight tentacles alternating with the same number of sense-bodies.

Nauphanta polaris sp. nov.

The umbrella, when observed laterally in profile, is seen to be irregularly conical, hat-shaped, with inflated crown. The diameter of the largest specimen is 1.9 inches [48.26^{mm}]; that of the smallest a quarter of an inch [6.35^{mm}]. Color, "maroon, semi-transparent, the central part of the specimens appearing almost black."

The umbrella is superficially divided into two zones, as can be seen either from the exumbrella or laterally. The central zone (Fig. 2, *dis. cent.*) is called the zona centralis; the marginal, the zona coronalis or corona. The central zone forms the crown of the hat-shaped umbrella, or its apical region, and is separated from the corona by a ditch called the fossa coronalis (Fig. 2, *fos. cor.*). The zona centralis is nearly spherical, slightly constricted near the apex, and has an opaque interior. The corona (*cor.*) forms that part of the umbrella which is placed abaxially to the coronal fossa, by which it is separated from the central zone. Its surface is inclined at an angle of forty-five degrees to the axis of the medusa. It has an annular contour. It bears on its peripheral border the tentacles (*ta.*), sense-bodies (*sb*), and marginal lappets (*mg. lp.*), known also as patagia.

When seen either from the exumbrella or in profile laterally (Fig. 2), the corona is seen to be crossed by sixteen radial incisions, which separate the same number of radial elevations extending from the fossa (*fos. cor.*) to the external margin of the umbrella.

These ridges or elevations (*soc. ta.* and *soc. sb.*) are known as socles,† and support alternately the tentacles and sense-bodies. On the peripheral margin the socles are broader than in the vicinity of the coronal fossa, and are therefore slightly wedge-shaped. In the sketches no difference was observed in the size (breadth) of the tentacular (*soc. ta.*) and the socles of sense-bodies (*soc. sb.*). The specimens from which they were drawn must have shown a marked difference in dimensions.

*I believe that Nauphanta is a surface genus. The genus Atolla, also ascribed by Hæckel to deep water, has been found again and again in the surface waters of the Gulf Stream by the U. S. Fish Commission steamer *Albatross*. The name Nauphanta was applied to a worm in 1876, and to a Medusa in 1879. By the law of priority a new name must be given to the Medusa.

‡This term seems preferable to "sockels," a word introduced by the translator in Hæckel's Deep Sea Medusæ of the *Challenger* Expedition (*op. cit.*).

EXPLANATION TO PLATE I.

FIG. 1. *Nauphanta polaris*, Fewkes. View from the oral region.
FIG. 2. *Nauphanta*, from one side.
(*a*) Fig. 1 and (*b*) Fig. 2 are corresponding regions of the medusa.

(Both of these drawings were made by H. L. Gardiner.)

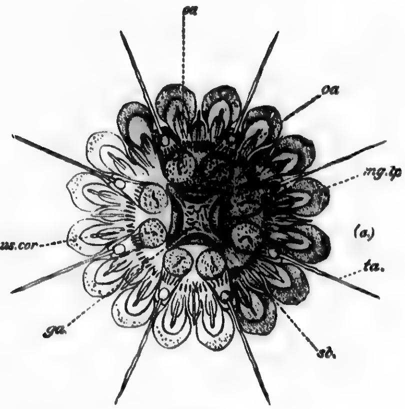
oa
oa
mg.lp
(a.)
mus.cor
ta.
ga.
sb.

Fig.1.

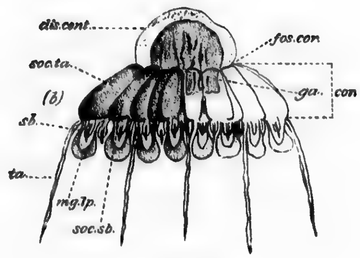
dis.cent.
fos.con
soc.ta.
(b)
ga.
con
sb.
ta.
mg.lp.
soc.sb.

Fig.2.

Each tentacular socle (*soc. ta.*) bears on the peripheral border a tentacle which alternates with a sense-body. There are therefore eight* tentacles and eight sense-bodies, with the same number respectively of tentacular socles and socles of the sense-bodies.

The marginal lappets (*mg. lp.*) hang almost vertically from the peripheral or abaxial end of the socles. They are sixteen in number, and alternate with the tentacles and sense-bodies, bridging the incisions which separate the tentacular socle from that of the sense-body. Each marginal lappet is circular, composed of an outer, distal, thin region skirting an axial or basal thickened portion, which serves as its support and unites it to the margin of the umbrella. The basal region is penetrated by a simple, unbranched tube, blindly ending on the distal end, and probably opening into a ring-shaped sinus, or sinus coronalis, at the proximal or axial extremity. The region of the lappet which forms its outer end, or rim, is dotted in the sketch as if with a pigment of deeper color than the umbrella.

The tentacles (*ta.*) arise from a somewhat thickened base, into which runs a tube similar to that mentioned in the case of the marginal lappets. The tentacles are eight in number, flexible, "eight-tenths of an inch [20.32^{mm}] in length." The peduncles of the eight sense-bodies (*sb.*) are slender, penetrated by an unbranched tube. No sense-capsules represented in the sketches.

Fig. 1 probably represents the medusa from the subumbral side, the quadrate central body (*ga.*) representing the stomach, and the ring of eight swollen spherical glands about it the ovaries (*ov.*), or spermaries.

The stomach, when seen from the subumbral side, is quadrangular, the angles of the square lying in the same radii as alternate sense-bodies. The union of the stomach with the wall of the subumbrella is in the form of a cross with equal arms. The lips are simple, without appendages. Flamentous bodies in the interior of the stomach, inclosed by the four walls of the quadrant, as shown in Fig. 2, are probably gastral filaments. The diameter of the stomach is .65 of an inch [16.51^{mm}].

No visible representation of a division of the subumbrella into central disk and corona was observed.

The eight sexual glands forming a zone immediately surrounding the stomach are regularly arranged, the intervals being about equal between them. Abaxially to this zone, in the position occupied by the great subumbral coronal muscles of Atolla and Collaspis, we find a zone of parallel radial markings (*mus. cor.*), which are identified as dividing lines which separate the bellies of the smaller muscles which together form the large muscle.

Still more peripherally placed than the last zone, we can see the abaxial extremities of the tentacular socles through the transparent walls of the subumbrella, and outside of this zone is the zone formed by the under sides of the marginal lappets (*mg. lp.*). There can be little doubt that this medusa, if not the same as *N. challengeri*, is closely allied to it. Nauphanta as a genus is so characteristic in the radial sculpturing of the corona, and one sketch of the polar jelly-fish shows the structure in such a marked way, that I have not hesitated to call the medusa from which the drawings were made a true Nauphanta. In the notes accompanying the sketches the medusa is doubtfully referred to *Ptychogastria polaris*, described by Allman ("Narrative of a Voyage to the Polar Sea during 1875–'76, in H. M. Ships *Alert* and *Discovery*," vol. ii, p. 292). This suggestion I cannot entertain, for, if the description by Allman can be relied upon (as it undoubtedly can), we find in *P. polaris* none of the characteristic coronal socles of the above description, and a much larger number of tentacles in a smaller specimen. The marginal lappets of the two are very different in size, number, and relative prominence. I cannot, therefore, accept the suggestion of the notes.

Confessedly, however closely the generic details of the structure agree in *Nauphanta challengeri* and *N. polaris*, the profiles of the two Medusæ, as seen in the lateral views by Hæckel for the former, and by Sergeant Gardiner for the latter, are very different. Let me call to mind, however, that Hæckel's sketch is from an alcoholic specimen, while that of Gardiner's is from a live medusa. I believe, therefore, that the latter's profile view (Pl. I, Fig. 2) is more accurate than Hæckel's for general outline, and it certainly approaches more closely what we have every reason to suspect would be the true form of the umbrella from the relationship of the genus to Periphylla, where the central zone is more prominent.

The difference in profile between Hæckel's Nauphanta and the polar specimen is the main ground of my separating the latter as a new species.

In a reconsideration of what is written above, in the light of new studies of Periphylla which have been made upon specimens of this genus collected by the *Albatross*, I am led to think that the *Nauphanta polaris*

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* The notes also say that there are *eight* tentacles. This is an important thing, as it is one of the few differences between Nauphanta and Periphylla.

is in some way connected with Periphylla. Either those who have captured the medusa of Steenstrup from polar waters have not correctly noted the number of tentacles, and their Medusæ are wrongly identified or my *Nauphanta polaris* with *eight* tentacles is the medusa which they observed. It is also possible that in the young stages Periphylla has eight tentacles and eight sense-bodies.* This seems, however, improbable, as there are many young specimens of Periphylla in my possession, which are smaller than that of *Nauphanta polaris*, in which we have twelve tentacles arranged in four sets of three each and four sense-bodies. We see, therefore, no reason to suppose that *N. polaris* is the young of Periphylla, and every reason to adhere to what is expressed above, that a new Nauphanta occurs in the icy waters of the Arctic.

NARCOMEDUSÆ.

The Narcomedusæ is the third of the four orders into which Hæckel divides the craspedote Medusæ, or those with a true velum. It includes jelly-fishes, with a hearing organ free on the rim of the bell, and with entodermic otoliths. There are seldom ocelli on the base of the tentacles, and the tentacles ordinarily arise from the dorsal side of the umbrella and are connected to the margin by rib-like bodies by which this part of the umbrella is divided into a number of lappets. Radial canals are sometimes present, and often wanting, when they are replaced by pouches from the stomach. Marginal canal ordinarily present, sometimes absent, but when present forming a number of bow-shaped loops. The tentacles vary in number from two to thirty-two. The Narcomedusæ are divided into four families, viz.: (1) *Cunanthidæ;* (2) *Peganthidæ;* (3) *Æginidæ;* (4) *Solmaridæ.*

The Lady Franklin Bay party found representatives of the Æginidæ and Solmaridæ. Of the Solmaridæ they collected Solmundus and Solmundella.

Solmundella sp.?

A specimen, the sketches of which by Sergeant Gardiner have characters of both Solmundella and Æginella, was captured in Discovery Harbor. As the most important, perhaps only, difference between the two genera lies in the absence of peroneal canals and circular tube in Solmundella and their presence in Æginella, and as these structures may have been overlooked if they exist in this specimen, I cannot definitely identify this genus from the drawing. The bell is shaped like that of Solmundella and has two long tentacles and eight stomach pouches. The umbrella is destitute of tubes. It is not possible to identify this species from the incompleteness of my knowledge of the Arctic medusa.

Solmundus sp.?

What has already been written of the tubes in the umbrella of Solmundella and Æginella may be said also of a Solmarid with four tentacles, closely allied to the above. If this specimen has peroneal and circular vessels it should be placed in Ægina, otherwise in Solmundus. As these structures are not represented we must refer it to Solmundus, although the fact that Ægina is known to occur in the Arctic leads me to suspect that the somewhat inconspicuous tubes were overlooked in the specimen collected by the Lady Franklin Bay Expedition.

Tubes are not represented in the sketches (Lockwood, *del.*), and I have placed the medusa in the genus Solmundus. It may, however, be the same as the *Ægina pachyderma*, Hæckel, which was first described from near Nahant. Solmundella, or the form described above, may possibly be its younger stage of growth.

According to the notes the medusa when found had "a small shrimp (calanus?) in its stomach," which can easily be seen through the walls of the umbrella.

The specimen "has four tentacles, which, unlike others, spring from the outer surface (of the bell), and have their roots about half way between the summit and base."

Ægina citrea, Eschscholtz.

Mr. Murdoch repeatedly took this medusa in the neighborhood of Point Barrow, Alaska.

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* Lieutenant Greely notes that *Nauphanta polaris* of different sizes, from a quarter of an inch [6.35^{mm}] up to the size here shown, were observed, and that the structural appearance of small and large examples were identical. Specimens obtained were kept in glass dishes so that their movements and structure could be seen from all standpoints. Specimens obtained lived many days when kept in sea water occasionally renewed.

TRACHOMEDUSÆ.

Aglantha digitalis, Hæckel.

This beautiful medusa, common in the Arctic, is found as far south as Newport, R. I. In the cold waters of the coast of Nova Scotia it is common.

Aglantha camtschatica, Hæckel.

This species is found in that part of the Arctic adjoining Point Barrow.

CRASPEDOTA.

A number of hydroid Medusæ was taken by the Lady Franklin Bay Expedition, but in most instances it was impossible for me to identify even the families. This group of Medusæ, always the richest in number of genera in all surface fishing, is also found in greater numbers in the polar regions. A few of the more important genera and species of free hydroid Medusæ are introduced as a help to the future monographer of the Arctic hydrozoa. The fixed hydroids known to inhabit Arctic waters are omitted.*

The only craspedote medusa which could be, with any degree of certainty, identified was a species of *Tiara* referred to *T. conifera*, Hæckel.

Tiara conifera, Hæckel.

Two good sketches of a medusa referred to this species were made by Sergeant Gardiner. They agree with Hæckel's description in the most particulars. Hæckel says, however, that the type has from twenty-four to thirty-two tentacles. Sergeant Gardiner's sketches represent at least forty-eight of these structures.

T. conifera is probably a variety of the highly variable *T. pileata*, L. Ag.

The notes mention that with the medusa, which is here referred to *T. conifera*, there was a specimen "like it, with four large and numerous small tentacles, but without projections at the top." I offer the suggestion that this is the young of *T. conifera*, and likewise of the *Oceania turrita*, Forbes, both of which, with *O. octona*, Forbes, are probably one species and young of *T. pileata*.

Although the *O. turrita* has four tentacles, it has a large apical prominence, and must be regarded as older than Greely's *Tiara* with four large tentacles. In the genera *Stomatoca* and *Dinematella*, where a similar apical conical projection is found in the adult, we know that it is absent in the young, and the same condition is probably true in *Tiara conifera*.

The type specimen of *T. conifera* was collected in Greenland.

FREE HYDROID MEDUSÆ KNOWN TO INHABIT THE ARCTIC.

In addition to the list of Medusæ here given there are many others which probably live in the cold waters of the Arctic. We are justified in saying this from the fact that we are acquainted with a number of hydroids from this region, and among them there are genera which have known free Medusæ. As the Lady Franklin Bay party did not collect a single hydroid I have not deemed it warrantable to consider these hydroids.

The following hydroid Medusæ have been collected in the Arctic and adjacent waters. Those with a star prefixed to the generic name were found in the neighborhood of Point Barrow, Alaska, the remainder from the neighborhood of Greenland:

Codonium princeps, Hæckel.
**Sarsia rosaria*, Hæckel.
Sarsia mirabilis, L. Agassiz.
Pandœa saltatoria, Fab. (?).
Turris digitalis, Forbes.
Turris episcopalis, Fewkes.
Catablema campanula, Hæckel.
Catablema eurystoma, Hæckel.
Melicertum campanula, A. Agassiz.
Bougainvillea superciliaris, L. Agassiz.
Thaumantias eschscholtzii, Hæckel.
Obelia diaphana, Allman.
Stomobrachium tentaculatum, L. Agassiz.
Staurostoma arctica, Hæckel.
* *Gemmaria*.
Polycanna groenlandica, Hæckel.
Ptychogastria polaris, Allman.
* *Staurophora mertensii*, Brandt.

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* Genera of Lucernarians, which have been recorded from the Arctic, are also omitted from the list of Acraspeda, where they would properly be recorded. This paper considers the floating medusan life only.

SIPHONOPHORA.

The cold waters of the coast of New England are peopled by a large Siphonophore, to the young of which A. Agassiz gave the name of *Nanomia cara*. This animal, which is very abundant at times in the Bay of Fundy, is probably that referred to in the following note: "April 24, 1884.—I also caught a rope-like collection of organisms which was over a foot long [over .3^m]. They were of blood color, part light or ruby, and part like clotted blood. They moved through the water with a sinuous motion like that of a sluggish snake. They fell apart in the net and separated very readily. Possibly they are eggs of young Medusæ, say of No. 2. There was some gelatinous substance intermixed with them." Since my preliminary report on the Lady Franklin Bay Medusæ was published, I have been able to carefully study the anatomy of the Nanomia of A. Agassiz, and shall elsewhere publish an account of the pecularities of this Siphonophore. My studies support what has already been written by me on the supposed Siphonophore collected by Lieutenant Greely. The Physophore collected by the Lady Franklin Bay party is probably the same as the *Agalmopsis* (*Nanomia*) *cara* (A. Ag.), Fewkes, recorded from Robeson Channel by Dr. E. L. Moss ('On the Surface Fauna of the Arctic Seas,' *Journ. Linn. Soc.*, vol. xiv. p. 122.

Epibulia sp.

A species of Epibulia is found in the waters of Greenland. An unknown Diphyes is also found on the west coast near Robeson Channel.

CTENOPHORA.

Lesueuria, Edwards.

The following notes are thought to refer to the genus *Lesueuria:*

"April 24, 1883.—I caught to-day a very large medusa, 5 inches [127^{mm}] long by 2½ inches [63.50^{mm}] wide. It was of the most delicate character, and fell to pieces while the doctor was getting it into alcohol. I had it drawn by Lieutenant Lockwood. It had two spots of smoke-color at the upper end, which was pointed like a melon. Indeed, the shape was that of a melon, except that the lower end was, as you may say, cut off. There were eight ribs (combs), which were of smoke-color, and which, as far as the lower end went, were simply a succession of annular formations that presented a serrated appearance on either side. There appeared to be two large stomachs. The animal was transparent everywhere, except the ribs and spots and the thread-like outline of the stomachs. Occasionally from the tentacles iridescent colors, with purple shades predominating, were seen."

The last sentence in the above notes would indicate that the *Ctenophore* here described does not belong to *Beroë*, which genus the sketch closely resembles. Neither notes nor sketches are exact enough to determine whether the "tentacles" are true tentacles or auricles. I suspect from the "iridescent colors" that auricles and not tentacles were observed by the writer of the notes. If auricles or tentacles are present, the *Ctenophore* is not a *Beroë*.

Bolina, Mertens.

A sketch which, as far as it goes, points to the genus *Bolina* is supposed to belong to this genus known to frequent Arctic waters.

The following notes confirm this belief:

"Saddle-bags" (a good characterization of the form of *Bolina* when seen in certain conditions).

"Found May 21, 1883.—The fuzzy edges (combs), iridescent and eight in number, extend only half the length of the animal, where they give place to an extension in the form of a thin dark-brown line (chymiferous tubes) running to the lower extremity. Specimen 3 inches (length)."

It is probable that this *Bolina* is the same as that observed in 1671 near Spitzbergen by Mertens, a pioneer in the study of the *Ctenophora*.

Mertensia ovum (?), Mörch.

A good drawing (Gardiner, *del.*) of a tentaculated Ctenophore, allied to *M. ovum*, is found in the collection, with accompanying notes:

"Length (antero-posterior axis), 1.1 inch; width (lateral axis), .7 inch; thickness (shorter lateral axis), .5 inch. Color white, semi-transparent. The fringes (combs) iridescent. Trail cirrhi (tentacles) a delicate pink. The ball (body) in the center, orange, tipped with red"

Pleurobrachia rhododactyla, (Ag.).

Beroë roseola, (Ag.).

REMARKS ON UNKNOWN MEDUSÆ.

Sketches Nos. 9 and 10.

I find myself unable to make out enough of the structure in sketches 1a, 1b, 1c, 2, 3, and 6 (Lockwood, *del.*) to determine the genus of Medusæ from which they were drawn with any accuracy. Figs. 1a, 1c, and 6 are undoubtedly from a Tubularian hydroid, and 3 is probably either the Ephyra or adult of a *Discophore*. In regard to 2 I have no opinion to express.

NOTES.

I find myself unable to identify the Medusæ mentioned in the following notes:

No. 11.

"Another, no drawing, something like No. 4, Gardiner, *del.*, [The Medusæ drawn by Sergeant Gardiner, No. 4, printed No. 7, is probably *Bolina*, which has only two true tentacles and four auricles, which are possibly the bodies mentioned as tentacles. The four auricles with the two tentacles together would make six tentacles mentioned in the notes.] except (there are) two solid lines and four large tentacles instead of three lines and six tentacles, is nearly crown-shaped, and has two lines which, running from edge to edge, cross each other through the summit. There is a small yellow spot filling in between the lines and the summit. There are four tentacles, the extensions of the dividing lines, and numerous small ones."

If the "two lines which, running from edge to edge, cross each other through the summit," are, as I suspect, rows of "combs," and if there are only four of these rows (viz, two pairs) on the surface of the body, this is a new genus.

No. 12.

I have no opinion to express in regard to the generic name of the Medusæ found during the winter in water drawn from "tide-hole." They are, according to the notes, found in large numbers and are phosphorescent. "I doubt," writes Lieutenant Greely, "if they were more than one-twentieth of an inch [1.27^{mm}] in diameter, and the only color visible was a faint brownish spot."

No. 13.

Lieutenant Lockwood saw, at the head of Archer Fiord, 65 miles SSW. of Fort Conger, large numbers of Medusæ which appeared to be of the same kind. Sergeant Brainard, who was with him, also saw them in numbers. Lieutenant Lockwood brought back (to Fort Conger) one of these, which was "round, or nearly so, and about ten inches [254^{mm}] in diameter. It had a dark yellowish color." This may be an Acraspedote medusa, but it is not possible for me to tell to what genus it belongs.

The following Medusæ were collected by the Lady Franklin Bay Expedition:

1. *Nauphanta polaris*, Fewkes.
2. *Solmundella* (?).
3. *Solmundus* (?).
4. *Tiara conifera*, Hæckel.
5. *Physophore* (?). *Agalmopsis* (*Nanomia*) *cara* (A. Ag.).
6. *Lesueuria* sp. (?)
7. *Bolina* sp. (?)
8. *Mertensia ovum*, Mörch.

9–13. Other Medusæ of doubtful affinities. Sketches and notes insufficient for identification.

ECHINODERMATA, VERMES, CRUSTACEA, AND PTEROPOD MOLLUSCA.

APPENDIX No. 133.

BY J. WALTER FEWKES.

A few notes and sketches of marine animals, Echinoderms, Crustacea, Mollusca, and Vermes, were sent me for identification by Lieutenant Greely. From these, in some instances, I am able to hazard a suggestion of the name of the animal from which they were made. In no case has it been possible to identify the species without doubt, and in many instances I have simply edited the original notes. It is already known that a rich and varied fauna of lower animals peoples the Arctic at high latitudes, and many have been collected in even more northern waters than those of Lady Franklin Bay. It is thought, however, that some of the animals here recorded have never before been observed so far north. I regret that it was impossible that specimens could not be sent me for examination.

The animals here mentioned, unless other localities are indicated, were taken at Fort Conger, lat. 81° 44′ N.; long. 64° 45′ W. They were for the most part collected in the "tide-hole." I have endeavored to transcribe the notes *literatim* even when scientific terms are not used lest I should intrude my interpretations too much in the report. The sketches were made by Sergeant Gardiner. The animals were collected, unless otherwise mentioned, by Lieutenant Greely, by whom also most of the notes were written. The whole collection was made between May 17 and June 8, 1883.

As Mr. John Murdoch* has gone over the literature of Arctic and boreal invertebrates and given a complete bibliography, it does not seem necessary for me to duplicate his list since the works consulted are practically the same.

It is an interesting fact that several species of invertebrates which are recorded from Point Barrow are also found in Lady Franklin Bay.

ECHINODERMATA.

ASTEROIDA. Family *Ophiuridæ*. ?*Ophiopholis aculeata*, Gray.

The only member of the Asteroidea recorded is a brittle-star closely related to the highly variable *Ophiopholis aculeata*, Gray. The figure also resembles Ophiocoma.

Drawing Q, No. 11.

Collected May 23, 1883.

HOLOTHURIOIDEA. *Chirodota lævis*, Fbs.?

An unknown Holothurian is figured among the sketches. There are a few notes, but not enough to shed much light on its affinities. The drawing closely resembles a specimen of *Chirodota lævis*, Fbs., in the Museum of Comparative Zoölogy at Cambridge. The specimen referred to is from Greenland. *Myriotrochus Rinkii*, St., is recorded by several observers from the Arctic.

Drawing T, No. 14.

Collected May 23, 1883.

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* Report of the International Polar Expedition to Point Barrow, Alaska.

VERMES.

ANNELIDA. CHÆTOGNATHA. SAGITTA, sp. (?)

Good figures of a transparent worm show that it belongs to the well-known *Sagitta*, which has been recorded by several naturalists from the Arctic. The species is not the same as *S. bipunctata* Q. & G., and is different from the New England species, *S. elegans*, Verr.

Moss * says of Arctic Sagittæ:

"Sagittæ were also common both there (Smith's Sound) and in Baffin's Sea. They differed so slightly from the universal "bipunctata" of Quoy and Gaimard, that I include them in that species. They were, however, spineless, except for the setæ on the lateral fins. In southern *Sagittæ* the spines, as Mr. Busk observes, are very easily detached and are often absent in preserved specimens; but amongst the several large specimens captured uninjured in Melville Bay, I failed to find either spines or the bulbs from which they usually spring. Two varieties were captured, differing only in the shape of the caudal fin; in the one it was continuous, in the other interrupted at the tip. The fins are sometimes different on either side of the animal. It is worthy of remark that the rays of the fins occur in double series closely applied to each other; one set is sometimes seen inclined or bent in a direction not parallel to those above or below. I have since seen this double character in *Sagittæ* from the South Pacific. The cephalic hooklets are twelve in number. The anterior denticles of Krohn were four to six and the posterior eighteen to twenty. The corneal cells surrounding the ophthalmic pigment-points formed a continuous circle and were not broken into three groups as in the Sagitta described by Huxley."

The figures of a Sagitta made by Gardiner are probably of one of those mentioned above, although as before mentioned not *S. bipunctata*, Q. & G. The "spines" on the sides of the body are present in the young only of *S. elegans* and are lost in the adult. These structures are not figured in the *Sagitta* collected by Lieutenant Greely. The lateral fins of Greely's *Sagitta* closely resemble those of a large undescribed *Sagitta* which is found at Eastport, Me. The following notes accompany the drawings:

"Length, 1.2 inches [30.48mm]; width of broadest part, .2 inch [5.08mm]. Color, transparent white, with red to brown eyes. Dark line marks the intestinal tract."

The drawing shows that the lateral fins begin just back of the head and increase regularly in size (breadth) backward about two-thirds the distance from head to tail, at which point they suddenly contract in breadth to the lateral wall of the body. Lateral fins longer than in *bipunctata*.

Drawing B.

Collected May 17, 1883.

POLYCHÆTA. Family, *Polynoidæ*. ? *Harmothöe imbricata*, Linn.

Among the Polynoidæ collected by the *Alert* are specimens of *H. imbricata*, Linn. Several genera of Polynoidæ occur in Greenland. One of the most common of these is the genus *Polynöe*. A drawing of a Polynoid worm closely resembles *H. imbricata* and also *P. scabra* (Fab.) Sav. I cannot from the drawing identify this worm.

Drawing I, No. 2.

Collected May 20, 1883, by Private Long.

Family, PHYLLODOCEIDÆ. *Phyllodoce* sp. (?).

A drawing of an active worm, which has head and cephalic appendages like those of the genus *Phillodoce*, occurs in the collection. There are two eyes as in *Phyllodoce*, but the remaining organs are too imperfectly figured for identification. "Each fin has spots of red on it. The worm is generally transparent with an opaque green stripe of most brilliant shade which extends nearly the whole length of the body." The last-mentioned structure is probably the intestine.

Drawing U, No. 20.

Collected May 24, 1883.

Phyllodoce sp. (?).

There are notes and a sketch of a *Phyllodoce*-like worm of a different species from the above. The species could not be determined.

Drawing P. No. 10.

Collected May 23, 1883.

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* Preliminary Notice on the Surface Fauna of the Arctic Seas as observed in the recent Arctic Expedition. *Proc. Linn. Soc.*, xiv, p. 124.

Family, OPHELEIDÆ. *Ammotrypane aulogaster*, H. Rathke.

The notes on this worm are as follows:

"Length, 1.1 inches [27.94^{mm}]. Body smooth, composed of a multitude of minute rings. Internally toward the head a red substance appears, which becomes dark green and opaque near the tail and shows iridescence. A double ridge runs underneath the animal along the whole length, from which extends the fins."

Drawing R, No. 12.
Collected May 23, 1883.

Family, TEREBELLIDÆ, gen. incog.

Drawings S and W are apparently the same annelid and members of the family of Terebellidæ.
Collected May 24 and 25, 1883.

Family, SYLLIDÆ. *Chætosyllis Oerstedi*, Malm.

The following notes and a good drawing lead me to suppose that the genus *Chætosyllis* was observed by the party:

Color, dark red or brown. The body has ten lobes (parapodia?) on each side. From these lobes project a countless number of fine hairs (larger spines of dorsal ramus), also about a dozen claws (smaller spines from the ventral ramus) and a long (dorsal) and a short (ventral) tentacle (cirrus).

The tentacles (cirri) are formed as though a number of balls were attached together and strung out in a line. From the two lobes comprising the head there extends a lobed tentacle from each. These as well as the other projections (dorsal and ventral cirri) can contract at will. Eyes very dark red. Length, $\frac{1}{10}$-inch [2.54^{mm}]. This is the size of the specimen drawn. A note by Lieutenant Greely reads that there are others about $\frac{1}{2}$-inch [12.7^{mm}] long.

Although this description does not wholly coincide with the description of *Chætosyllis* by Malmgren, there is every probability that they are of the same genus of Annelids.

Drawing H, No. 1.
Connell saw a similar worm at Distant Cape.
Collected May 20, 1883.

Family, NEPHTHYIDÆ, gen. incog.

A fragment of a worm which could not be identified is figured.

The worm has a head shaped like *Nephthys* and has four cephalic tentacles. The form of the body differs greatly from the known species of *Nephthys*, and from its mutilated condition I cannot identify the genus. *N. coeca* (Fab.) occurs in the Arctic.

Drawing F, No. 3.
Collected May 22, 1883.

CRUSTACEA.

SCHIZOPODA. Family, *Mysidæ*. *Mysis oculata* (?), O. Fab.

Two sketches of a Mysis which resembles the above are found in the collection (Pl. II, figs. 5, 6). The species is possibly *M. Rayii*, Murdoch.

Collected June 8, 1883.

ISOPODA. *Arcturus Baffini*, Sabine, var. *Feildeni* (Miers).

Two good drawings of a crustacean which appears to be the above are found in the collection.
Drawing A.
Collected May 17, 1883.

AMPHIPODA. *Gammaracanthus loricatus* (Sab.), Sp. Bate.

"*Gammarus loricatus*," Sp. Bate. (*teste* Greely and Gardiner).

Gammaracanthus loricatus and *Gammarus locusta* (Lin.), J. C. F., are both common in the Arctic. I suppose the identification "*G. loricatus*" refers to the former.

Drawing wanting. Notes E.
Collected May, 1883.

Rhachotropis aculeata (Lepech.) Smith.

"*Tritropis aculeata*" Bœck or "*Talitrus Edwardsii*" (*teste* Greely). According to notes it differs from the latter as follows: (1) Tail has three "bifid plates." (2) Third pair of posterior legs very much longer than first or second. (3) Five joints in third pair of legs. (4) Reddish brown specks on body and legs, with dark brown and purple on the tail instead of red spots in the same places.

Drawing wanting. Notes K.
Captured May 21, 1883.

RED CROSS SHRIMP.

The name "Red Cross Shrimp" given by Lieutenant Greely and the men. Private Schneider found the same at Cape Beechey. The following notes were made of this crustacean:

"Color, brownish red. Legs, nine pairs, five pairs in front and four in rear; the last of the pair of legs colored red or brown.* Tail four articulated, with several long hairs at extremity. Body: the first division forms two-thirds of the length of the body; the remaining portions being separated into four small divisions. Head small, rounded, with one pair of antennæ extending from below the eyes, which are fully as long as the body. Eyes apparently colorless. Size, .08 inch long"

Figure wanting. Notes C.
Captured May 19, 1883.

MOLLUSCA.

PTEROPODA. *Clione papillionacea* (*borealis*), Pallas.

A pteropod of the genus *Clione* was found.
This mollusk is reported by Major Feilden, R. A., not to have been found north of Cape Sabine.
Drawing D, No. 5.
Collected May 22, 1883.

Hyalea (*Cavolina*) *tridentata*, Lam.

Hyalea tridentata, Lamark (*teste* Dr. Pavy).
Taken from stomach of *Phoca fœtida*.
Drawing wanting. Notes G.
Collected May 20, 1883.

TUNICATA.

Salpa (?)

The chain of animals which I have mentioned among the physophore Medusæ may be a catenated form of Salpa. I reaffirm my former opinion that it is a Siphonophore.

Moss† speaks of *Nanomia cara* (A. Ag.), as being found in Robeson Channel, and probably the animal recorded by Lieutenant Greely (see my report on the Medusæ) is a jelly-fish identical with that called Nanomia by Moss. The statement that the medusa is of the genus Nanomia is a wild guess. There is much more reason to refer it to Agalmopsis, but from the little which is known of it nothing more than that it is a physophore can be said. The Agalmopsis of Sars was found in high northern latitudes by its discoverer.

*It is possible some of these may be swimmers.—Lieut. GREELY.

† Preliminary Notice on the Surface Fauna of the Arctic Seas, as observed in the recent Arctic Expedition. *Proc. Linn. Soc.*, xiv, p. 124.

SPECIMENS OBTAINED BY THE LADY FRANKLIN BAY EXPEDITION.

Unless otherwise stated the specimens were obtained from the "tide-hole" at Fort Conger, 81° 44′ N., 64° 45′ W. The depth of the water at low tide was about 8 feet [2.4^{m}] and at high tide about 14 feet [4.3^{m}].

May 17, 1883 (B): "I caught to-day an organism which from the top view resembles a very small fish without fins. The specimen is substantially transparent, being of almost colorless white, except two small eyes which are of a reddish-brown color, and a dark line which probably marks the intestinal organs of the animal."

Sagitta sp.

May 20, 1883 (I): "Private Long caught an annelid in the 'tide-hole' to-day, which has been figured by Gardiner and described by me. The specimen, shortly after it was brought into the quarters while still in the sea-water in a shallow dish, commenced shedding scales from its back and, after casting the most of them, died."

(?) *Harmothoë imbricata* (?), L.

May 24, 1883 (U): "Caught a number of extremely active annelids all of the same species, in the 'tide-hole.' They varied from .4 to .6 of an inch [10.16 to 15.24^{mm}] in length. From near the black eyes, which are striking in color (?), numerous tentacles extend on either side. The worm is generally transparent with an opaque green stripe of a most brilliant shade which extends nearly the whole length of the body. Each fin has spots of red upon it."

Phyllodoce (?)

May 24, 1883 (W): "Caught a specimen which somewhat resembles specimen lately caught (S). It seems to be of the order Pteropoda. I thought it to be in a diseased condition at first, but later concluded that the sacs or excrescences must be eggs, which are yellowish-white, four-tenths of an inch [10.16^{mm}] long. The yellow near the head was speckled with red, and a short distance below the head was a protruding sac or excrescence of a reddish color."

Terebellidæ, gen. incog.

Specimen obtained by Lieutenant Greely; others procured about ½ inch [12.70^{mm}] long.

Specimen is $\frac{1}{10}$ of an inch [2.54^{mm}] in length; color, dark red or brown.

The body has ten lobes on either side. From these lobes project a countless number of fine hairs, also about a dozen claws (*b*) and a long and a short tentacle.

The tentacles are formed as though a number of balls were attached together and strung out in a line.

From the two lobes comprising the head there extends a lobed tentacle from each. These as well as the other projections.

The eyes, which are very dark red, the animal can contract at will.

May 21, 1883.—H. S. GARDINER.

May 20, 1883 (H): "I caught a new annelid in the 'tide-hole' to-day. Connell states that he saw a similar one in the 'tide-hole' at Distant Cape. The specimen has been figured by Sergeant Gardiner from under the microscope, and his drawing verified by me."

Chætosyllis oerstedi, Malm.

Of (A) my notes say, under date of May 17, 1883: "Caught in the 'tide-hole' a few days since what I take to be a variety of the species *Arcturus baffini*. It has, however, four long legs which are only one-half the length (1.5 inches [38.10^{mm}]) of the antennæ (3.0 inches [76.20^{mm}]), and three times the length of the body. Sergeant Gardiner has made a very careful drawing which is substantially to scale."

May —, 1883 (E): "Caught a new crustacean, which, after careful comparison by Gardiner and myself under magnifying glass and microscope, we decided to agree with *Gammarus loricàtus* as in 'Parry's First Voyage.'" ("E" not figured.)

Gammaracanthus loricatus (Sab.) sp. Bate.

May 21, 1883 (K) (not figured): "Long caught in the 'tide-hole' to-day a crustacean which seems to me to be one of the *Amphipoda tritropis aculeata* or *Talitrus Edwardsii.* It is figured as the latter in appendix to 'Parry's First Voyage,' page 233, Figs. 1 and 4. The following are the only differences I can detect after careful examination: The tail consists, as the description says, of three bifid plates, but the drawing has four. In our specimen the third pair of posterior legs is not only somewhat longer but very much longer than the first and second pairs. In the drawing this third pair of legs has only four joints or articulations, but this certainly has five. The color is white, as stated in Parry's description, but instead of red spots this one has reddish brown specks on body and legs with a blackish brown intermingled in places with a purplish tinge on the tail."

Rhachotropis aculeata (Lepech) Smith. "*Tritropis aculeata* or *Talitrus Edwardsii.*"

May 19, 1883 (C) (no figure): "A small crustacean, evidently of the shrimp species, was caught by me in quarters to-day. It is not uncommon, and when seen in the water resembles a scarlet spot. From the seeming shape of the spot I call it the 'Red Cross' shrimp, as do the men. (Private Schneider caught one of this species a few days later at Cape Beechey.) The shrimp was examined by Sergeant Gardiner under the microscope and is thus described: 'Color, brownish red; legs, nine pairs, five pairs in front and four in rear; the last of the pair of legs colored red or brown (note by Lieutenant Greely at the time. It is possible some of these may be swimmers); tail, four-articulated with several long hairs at extremity; body, the first division forms two-thirds of the length of the body, the remaining portions being separated into four small divisions; head small and rounded, with one pair of antennæ extending from below the eyes, which are fully as long as the body; eyes apparently colorless; size .08 inch [2.03^{mm}] long.'"

"*Red Cross*" shrimp.

CLIONE BOREALIS, Pallas. "HYALÆA TRIDENTATA," Lam.

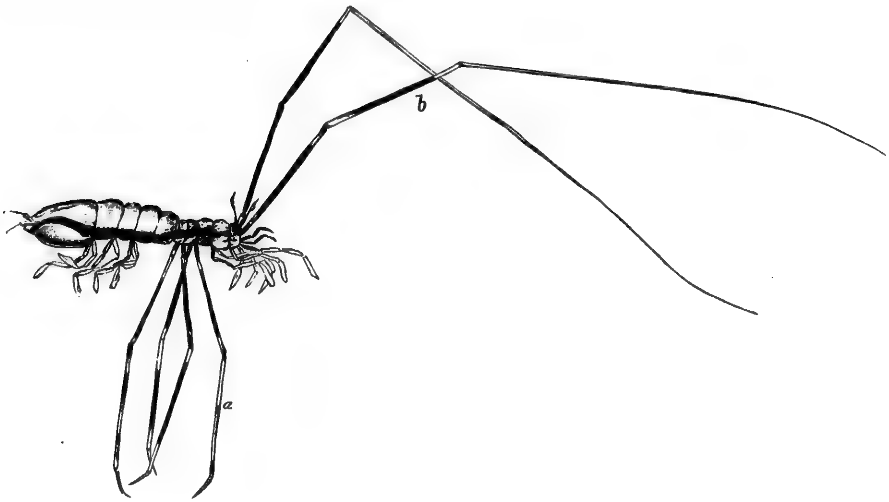
May 22, 1883 (D): 'I caught in the 'tide-hole' a mollusk of the order Pteropoda, probably Limacina or *Clio borealis.* I am doubtful of this, as Major Feilden, R. A., while reporting it to be common farther south, says that it has not been seen north of Cape Sabine. The doctor states that the above specimen is a medusa, and so I suppose I am in error in considering it a mollusk."

May 20, 1883 (G) (not figured): "In the stomach of the seal killed to-day (*Phoca fœtida*) was found a small semi-transparent shell of an amber yellow color, which the doctor thinks possibly to be, as he says, 'that of a mollusk'; *Pteropoda hyalæa tridentata*, Lamarck. As this mollusk is not found in Greenland, the fact would be interesting as showing the distribution (?) either of the mollusk or of this particular seal."

EXPLANATION TO PLATE II.

FIG. 1. Unknown Ophiuran, *Ophiopholis aculeata* Gray. Drawing Q, No. II.
FIG. 2. Unknown Holothurian, *Chirodota* or *Myriotrochus*. Drawing T, No. 14.
FIG. 3. *Clione borealis*, larva? Drawing D, No. 5.
FIG. 4. *Arcturus Baffini*, Sabine, var. *Feildeni?* Miers. *a*, walking legs; *b*, antennæ. Drawing A.
FIGS. 5, 6. *Mysis oculata* O. Fab.

(All figures drawn by Gardiner.)



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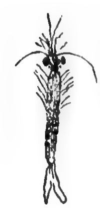

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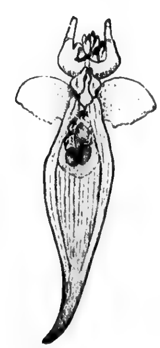

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EXPLANATION TO PLATE III.

FIG. 1. *Sagitta.* View from above. Drawing B.
FIG. 2. Same, from one side.
FIG. 3. Unknown genus allied to *Nephthys.* Drawing F, No. 3.
FIGS. 4, 5, 6. Unknown genera of Chætopods. (*b*) Fig. 6. Magnified spine of Fig. 6.
FIG. 7. *Harmothoë?*, possibly *Lepidonotus.* Drawing I, No. 2.
FIG. 8. *Ammotrypane aulogaster*, H. Rathke. Drawing R, No. 12.
FIG. 9. *Terebellidæ.* Gen. incog. Drawings S and H.
FIG. 10. *? Phyllodoce.* A. Section through the body, showing (*a*) dorsal, (*b*) ventral parapodia. Drawing U, No. 20.

(All figures drawn by Gardiner.)


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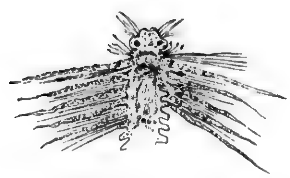
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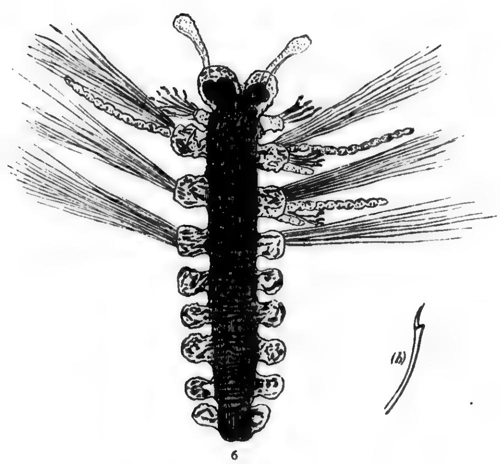

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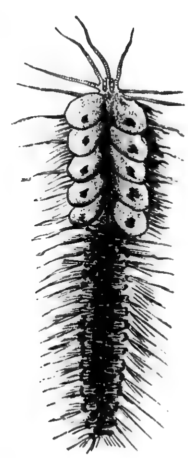
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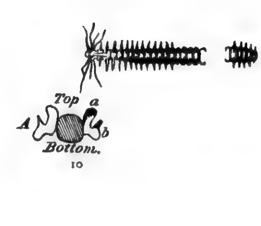


10

EXPLANATION OF THE PLATES.

The scanty notes and sketches from which the preceding paper was written have a value more especially from the fact that the animals from which they were made were found so far north. When the account was written, it was not thought that the sketches, with the exception of those of *Nauphanta*, would be published. As several of the sketches could not be referred to known genera, it has seemed well to reproduce them for the use of future explorers. It is, of course, recognized that better figures of several of the genera from which these were made have already been published, but it is thought that a reproduction of the sketches may have a value from the fact that they were made from animals which live in such high latitudes. The fact that the author of the preceding paper is unable to identify the animals from which the sketches were drawn does not mean that others may not recognize them. Imperfect sketches, like imperfect notes, are sometimes of great value. The figures are exact copies of the original sketches, which is the material used in the preparation of the paper.

TROUT CAUGHT IN LAKE ALEXANDRA, ABOUT EIGHT MILES FROM CONGER.

(From a photograph.)

TROUT CAUGHT IN LAKE ALEXANDRA. - $\varphi + 81° 40'$

By Dr. T. H. Bean,
Ichthyologist, U. S. Fish Commission.

In attempting to name this species of trout (from a photograph sent me), I desire to call attention to the fact that it is almost impossible to determine the charrs, and indeed any species of the *Salmonidæ*, from photographs alone. Certain essential characters cannot be brought out by a photograph, and without information concerning them one cannot reach a satisfactory conclusion. I have, however, compared the photograph with the descriptions and figures of all the species recorded from Arctic regions, and I have arrived at the belief that your trout is the *Salvelinus stagnalis* (Fabr.), Gill and Jordan, a species which has been taken in lakes and on the sea-coast of Greenland and Boothia Felix. This charr reaches a large size and bears considerable resemblance to the common brook trout of the Eastern United States, Canada, and Labrador, *Salvelinus fontinalis.* The latter species, however, has no hyoid teeth, while in *S. stagnalis* the hyoids are well developed.

I suspect that the *Salmo arcturus* of Günther, recorded in the "Proceedings of the Zoological Society of London," 1877, p. 294, as "the northernmost Salmonoid known at present," is very closely related to your species. This trout was taken at Victoria Lake and Floeberg Beach by Captain Feilden. It was found to be mature when twelve inches long, therefore it is, apparently, a smaller species than yours. There is much confusion and very little definite information about the Salmonoids of the high northern regions, mainly because of the lack of specimens from those regions and the insufficient descriptions published by some of the naturalists who studied Arctic specimens.

In examining the photograph, I can see very plainly traces of the milky-white margins which ornament the ventrals and anal during the breeding season.

MOLLUSCA.

APPENDIX NO. 134.

Many kinds of shells were found in the vicinity of Fort Conger as well as in adjacent valleys—The Bellows, Black Rock Vale, &c. The collections of shells made from time to time were turned over to the naturalist of the expedition, whose notes contain no description or reference to them.

These collections were packed and carefully stored at Fort Conger with other specimens. My private journal contains notes and drawings of several shells, but unfortunately include only such as were collected by me in 1883, during the few weeks in which it was possible to make a collection of marine specimens. After June 1, when water first commenced to find its way in the "tide-hole," I found it impracticable to obtain anything, as marine life seemed to withdraw, very probably owing to increasing temperature and decreasing salinity caused by the influx of melted snow from the land. The specimens have been very kindly identified by Mr. William H. Dall, curator of mollusks, U. S. National Museum.

"The determinations made from drawings to scale by Sergeant Hampden S. Gardiner at Fort Conger," says Mr. Dall, "in some cases must be a little uncertain in the absence of the specimens."

There were several very minute shells which could not be drawn without great trouble and under the microscope, and were omitted.

1. *Litorina grœnlandica*, Beck. If so, very large.

Obtained alive from tide-hole, depth of one fathom [1.8^{m}] at low water. Extreme length of shell 0.7 inch [17.78^{mm}].

2. *A. foraminifer.*

Found in "tide-hole" at depth of one fathom; dead; greatest diameter .03 inch [0.76^{mm}].

3. The very young shell of a *Chrysodomus*, just out of the egg capsule, the species indeterminable.

Dead; greatest length, .04 inch [1.02^{mm}]; least width, .025 inch [0.64^{mm}].

4. Perhaps *Leda portlandica*, but very doubtful; drawing insufficient.

Found alive; drawing thought unsatisfactory both by Sergeant Gardiner and myself. From comparison of specimen with "*Nucula portlandica*, plate 33, 3*a* and 3*b*, Belcher's Last of Arctic Voyages," the two seemed to my inexperienced eye to be identical. Specimens were found also on land at an elevation of about two hundred feet [61^{m}].

5. *Pecten* (*Pseudamussium*) *grœnlandicus*, Sky.

Found on land near Fort Conger at elevation not exceeding 200 feet [61^{m}]. Living specimens also obtained from "tide-hole."

6. *Astarte* probably, but too defective to determine, though the drawing is good.

Thought by me at Conger from descriptions and drawings to be *Astarte lactea*. Found at Proteus Point one mile south of station, at an elevation of 400 feet [122^{m}]. This specimen was selected for drawing as being in good condition; others were found to a 1,000 feet [305^{m}] elevation above the sea-level.

7. Probably *Saxicava arctica*, L.

From Black Rock Vale 600 feet [183^{m}] above, and ten or twelve miles from the sea. Very many specimens of this kind were found, both in The Bellows and Black Rock Vale as well as on the summits of the adjacent hills, some being obtained as high as 2,000 feet [610^{m}] above the present sea-level. Specimens of this shell were not found in the immediate vicinity of Fort Conger.

8. Fragment of *Mya arenaria* or *M. truncata*, L.

Found from near the sea to an elevation of 1,000 feet [305m], in the vicinity of Fort Conger.

9. Indeterminate fragment.

Many fragments of this undetermined species were found from the sea to 1,000 feet [305m] elevation. The shell was different from all others, but no whole specimen was ever obtained.

10. *Foraminifer* (?).

Found in tide-hole; diameter measured under microscope about .001 inch [.03mm]. Very delicate, and crumbled on exposure to dry air.

11. Probably *Margarita helicina*, Sky.

12. Probably young *Astarte*: the species probably a parasitic hydroid.

Color, orange and red; a number of small spines projecting from surface of shell. Found in "tide-hole." Similar shells found on adjacent land. Decidedly differing from No. 6.

13. *Trichotropis borealis*, Sky.

Specimen alive; from "tide-hole." Color, dingy white; length, .04 inch [1.02mm].

14. Probably *Foraminifer.*

Dead; from "tide-hole." Diameter, .07 inch [1.52mm]; color, dead white.

On May 20, 1883, Dr. Pavy found in the stomach of a fiord seal (*Phoca fœtida*) a piece of a semi-transparent, amber-yellow shell, which he thought was of a mollusk Pteropoda, *Hyalea tridentata*, Lamarck. The mollusk referred to, as far as I could learn at Fort Conger, is not found in Greenland.

Dr. Pavy also picked up near the summit of Sugar Loaf a fossil shell; elevation above the sea about 1,300 feet [396m].

I think it within bounds to estimate the different species of mollusk which were gathered near Fort Conger at thirty to thirty-five.

Mr. Dall also identified a few mollusks collected in Buchanan Strait, near Camp Clay, in the spring of 1884, viz, *Margarita umbilicolis*, *Margarita helicina*, var. *campanulata*, *Mya truncata.*

ASTRONOMICAL OBSERVATIONS.

APPENDIX No. 135.

A large number of astronomical observations were made at Fort Conger, not only to accurately determine the position of the station, but also in connection with the magnetic and pendulum work. These observations have been carefully examined and reduced by Assistant C. A. Schott, U. S. Coast and Geodetic Survey, and will be found satisfactorily treated by him in the magnetic observations.

The chief of each extended sledge expedition was carefully trained in the method of his proposed observations by Sergeant Edward Israel, the astronomer of the expedition, and was ordered to make time, latitude, and magnetic (declination from sun's bearing) observations as frequently as was practicable.

Lieutenant Lockwood made many sets, both in his trip to the Farthest North and in the crossing of Grinnell Land. The originals of these observations were brought back, and they have been recomputed by Sergeant George E. Curtis, Signal Corps, who reports that the close agreement of results confirms, strikingly, the accuracy and care of Sergeant Israel in making the original reductions.

The general high standing of Lieutenant Lockwood's astronomical work is evidenced by the fact that under Pierce's criterion only one or two sights were rejected out of nearly two hundred. While a single sight is not difficult to make, yet a series is most trying to the hardiest man. Freezing fingers, the glasses dimmed at the slightest breath, or even from the eye, and the constrained position necessarily assumed owing to the declination of the sun, are annoyances which observers in lower latitudes are exempt from.

The only reductions published in detail are of the observations at the Farthest North, which from their interest deserve this prominence. Dr. Pavy made no observations of any character during either of his journeys. The sheet of reductions, prepared by Sergeant Israel, of my own observations in Grinnell Land, was inadvertently left at Conger with the original records. Fortunately the original observations of the first trip were preserved in a duplicate journal to my wife, and have been recomputed by Sergeant Curtis. The close accord in the results obtained by different sets at the junction of Lake Hazen and Ruggles River (temporarily named as such) speak for themselves.

The results for the first three camps in the second journey are reproduced also from my journal. The succeeding observations were made from an injured sextant, the object-glass being inclined by one of the party accidentally stepping on the case. The observations were reduced by Sergeant Israel, who made use of the following formula to correct for the inclination:

CORRECTION FOR INCLINATION OF HORIZON GLASS.

Formula for computation:

$$\gamma' - \gamma = 2\ K^2 \sin 1'' \cos^2 \beta \cot \gamma.$$

where γ' = true angle: γ = the angle as measured by sextant. K = inclination of horizon glass; β = parallactic angle of sextant.

Assuming the sun's apparent diameter constant for the time during which the observations were made, and letting D′ represent this angle = 31′ 33″, also let D = sun's diameter determined from the observation for index correction, then

$$(D' - D) \tan D = 2\ K^2 \sin 1'' \cos^2 \beta \ .\cdot.\ (D' - D) \tan D \cot \gamma = \gamma' - \gamma.$$

The table gives this correction, the horizontal argument being D and vertical argument γ.

	16	18′	20′
°	″	″	″
35	+6.2	+6.1	+5.8
40	5.2	5.1	4.8
45	4.3	4.3	4.0
50	3.6	3.6	3.4
55	3.0	3.0	2.8
60	2.5	2.5	2.3
65	+2.0	2.0	+1.9

That the preceding table furnished an adequate and sufficient correction to the sextant was shown by the agreement in results in preceding journey at junction Lake Hazen and Ruggles River, and also by the fact that the position of Mount C. A. Arthur, necessarily determined by bearings and estimated distance from adjacent points astronomically determined by Lieutenant Lockwood and myself, varied but two miles between the various results.

Inclosure No. 4 contains the results of the astronomical observations.

Inclosures 1 to 3 contain the detailed reduction of the astronomical observations to the Farthest North.

A. W. GREELY, *Lieutenant.*

[Inclosure No. 1.]

STUDY DIVISION, *January* 30, 1886.

Prof. CLEVELAND ABBE:

SIR: In accordance with your instructions I have examined Sergeant Israel's computations of the astronomical observations made by Lieutenant Lockwood on the north coast of Greenland, May 4 to 20, 1882, together with the original observations, and have the honor to submit the accompanying report.

Very respectfully,

G. E. CURTIS,
Sergeant, Signal Corps.

Respectfully forwarded to the Chief Signal Officer for the use of Lieutenant Greely.

CLEVELAND ABBE,
Professor and Assistant, Signal Service.

[Inclosure No. 2.]

LIEUTENANT LOCKWOOD'S ASTRONOMICAL OBSERVATIONS ON THE NORTH COAST OF GREENLAND.

REPORT BY G. E. CURTIS.

The sextant observations made by Lieutenant Lockwood on his sledge journey to Lockwood Island were reduced by Sergeant Israel, astronomer to the expedition, after the return to Fort Conger.

The following are substantially his computations, corrected in a few cases for arithmetical mistakes. In several instances, when an error in the work has seemed to exist, a parallel revised computation has been inclosed in brackets alongside of the original figures. In general, however, Sergeant Israel's computations indicate great care, even in the smallest details, exhibiting a greater degree of precision than is necessary to be applied to observations of this character.

The notes accompanying the observations and computations were found to be insufficient for their interpretation without additional explanation. This needed information has been fully supplied by Sergeant Brainard, and is embodied in the following introductory notes.

The sextant carried on the expedition is marked Gilkerson & Co., Tower Hill, London; the radius of the arc is 4 inches, and its weight, independent of box, is 18½ ounces. The arc is graduated into divisions of twenty minutes; the vernier contains forty divisions, so that the smallest reading of the instrument is to a half minute. So close are the lines of the vernier that, in determining the coincidence of the arc and vernier to the half minute, the limit of accuracy has been attained. The observations were made by Lieutenant Lockwood, and the time taken by Sergeant Brainard with the watch carried by him. This watch is designated in the watch comparisons as "Brainard." Lieutenant Lockwood carried two watches, which are designated in the watch comparisons as "Lockwood" and "Jewell." The rates of these two watches, obtained from comparisons made before and after the expedition, are given in connection with the observations of May 15. The variability of these rates and the uncertainty of the mean of the two watches, may be judged from the following differences on May 15:

	h.	m.
Difference between Fort Conger and local time by "Lockwood"	1	34.8
Difference between Fort Conger and local time by "Jewell"	1	37.0
Mean	1	35.9

The correction and rate of the watch carried by Sergeant Brainard, with which the observations were timed, were obtained by comparisons with "Lockwood" and "Jewell." These comparisons, given on page 64, show that the rate of Brainard's watch was quite variable. For this reason no attempt has been made to revise the rates given in Sergeant Israel's computations, although it is not always possible to reproduce them from the watch comparisons. The general accuracy and high character of his work justifies the belief that, in cases where the assignment of values was necessarily, to a greater or less extent, a matter of judgment, the figures adopted by Sergeant Israel after consultation with the observers, are of the highest attainable value and cannot now be improved by a revision.

The refractions are not mean refractions, but have been corrected for temperature and pressure.

The observations at "Farthest," May 14 and 15, are arranged in the order of dependence in computation and not in the order of time.

Remarks on the accuracy of the observations and extracts from the narrative report relative to the attendant atmospheric conditions are contained in the following paragraphs for the respective dates:

May 6.—The watch comparisons indicate that the rate of the observation-watch, Brainard, was losing instead of gaining. This change in the computation makes no appreciable difference in the resulting latitude.

May 8.—The narrative report of the expedition contains this entry: "Sun dimly visible, 7.25 p. m.; breakfast, after which I took an observation or rather attempted to." The times entered in the narrative are presumably from Lieutenant Lockwood's own watch.

May 10.—The narrative report contains the following entries: "3.25—4.18 a. m., stopped and took observation, the sun being dimly visible. * * * * 9.15—9.45 a. m., saw the sun very indistinctly through the clouds and stopped for observation; strong wind from the west."

In the original computation for time, the reduction to the sun's center has been wrongly applied. A parallel revised computation has been given in brackets.

The two observations made between 9.15 and 9.45 a. m., by Lockwood's watch, record the same altitude, although made from 20 to 30 minutes before noon, according to the observations for time. They manifest, therefore, a considerable uncertainty in pointing, due to the dimness of the sun.

From the estimates of distance in the narrative report, the distance between the first and second halts for observation was about 11½ miles. If the observations were more accurate, the watch correction on local time obtained from the observation at the first halt should be corrected for the difference in longitude before applying it in the computation of the observations made at the second halt.

May 12.—The narrative contains the following entries: "5 a. m., fed dogs; some time occupied in taking an observation for latitude, the sun being dimly visible; 1.30 p. m., took observation for time, the weather clearing up."

May 13.—The narrative has the following: "At 5.30—6.15 a. m. we were stopped by another lead or lane of water. The sun being discernible, I took an observation." "10.10—10.40 a. m. attempted an observation; very severe work and doubtful of any value."

Farthest, May 14 and 15.—The following entry is found in the daily narrative for May 14: "The weather had now cleared up beautifully, the sun bright and clear, and the atmosphere calm and mild. Most of the time from now till midnight was taken up with observations, &c." The time to which the word "now" refers is not recorded, but was probably about 4.00 p. m.

The index correction of the sextant was determined at the beginning and close of each set of observations by measurements of the sun's diameter from readings on and off the arc.

These separate values have a total range of from 2′ to 6′, and at times differ over 2′ during a single set of observations. In order to ascertain the accuracy and reliability of this portion of the work, the probable variation of a single index correction, from the mean of twenty determinations, has been compared with the probable error of the corresponding observed solar diameters, and the following results obtained:

Probable error of any single measure of the sun's diameter	0′.47
Probable error of the mean of twenty observations of the sun's diameter	0′.10
Probable variation of any single measure of the index correction from the mean	0′.79

But the probable error of observation of the index correction is the same as the probable error of the observed sun's diameter; therefore the excess found above in the variability of the index correction represents actual changes in the sextant. The variation of 0.′79, accordingly, is the combined probable error of observation and the actual change in the sextant.

The probable amount of this actual change of the index correction is equal to $\sqrt{0.79^2-0.47^2} = 0'.63$.

The use of an average index correction would therefore introduce a larger error than is compensated for by the increased accuracy of the mean over the accuracy of a single observation. The individual determinations of the index correction are, consequently, the best values to use in the reduction of the observations, and their reliability is expressed by the probable error of a single measure, 0′.47, which is equal to the smallest division of the vernier.

OBSERVATIONS FOR TIME AT FARTHEST NORTH.

The mean of two sets of observations, made about four hours before and after midnight, gives the watch time of midnight, May 14; the result of sets of equal altitudes in the morning and afternoon gives the watch time of noon, May 15.

The difference in the watch correction obtained from these two results, after correction for the watch rate for 12 hours, is a quarter minute, corresponding to a difference in longitude of one-half mile.

The discordance between the individual results of the two sets before and after midnight of the 14th is much greater than this, but is not a criterion of the accuracy of their mean; for a small error in the assumed latitude produces a large variation between the watch corrections resulting from the two sets, without materially affecting their mean.

In the present case, the assumption of a higher latitude than the one used will largely reduce the discrepancy. These observations thus furnish an indication of the latitude, independently of the circummeridian observations.

Owing to the variability of the watch rates, the uncertainty in the resulting longitude is greater than that of the time determination, so that its accuracy is limited by the former rather than by the latter.

The mean of the longitudes given by "Lockwood" and "Jewell," has an uncertainty of *one minute of time* or *two miles in distance.*

OBSERVATIONS FOR LATITUDE AT FARTHEST NORTH.

Sets of circummeridian observations were made at midnight of May 14, and at noon of May 15.

Observations at midnight, May 14.—The values of the index correction determined before and after the observations are 3'.5 and 5'.0, respectively.

The errors of the corresponding solar diameters are so small that the two values indicate a real change in the condition of the sextant. On the assumption that this change was a progressive one, a progressive index correction has been adopted for the correction of the individual readings, instead of using for all the mean of the two values. The validity of this assumption is confirmed by a material diminution in the residuals.

Observations at noon, May 15.—Of the eighteen individual pointings, three, namely, numbers 1, 2, and 10, have a considerable discordance with the remaining altitudes and recorded times. These are not sufficiently in error to be rejected by the usual criterion, and, therefore, have been retained in computing the mean. Their rejection would increase the latitude 0'.2.

After applying all corrections, the latitudes obtained from the two sets of observations contain an outstanding discrepancy, not accounted for by their probable errors or by assignable uncertainties in the refractions. From the known variability in the condition of the sextant, as exhibited in the rapid changes of the index correction, this discrepancy in the two results seems to be best attributed to uncorrected instrumental errors. No sufficient reason is found in the conditions of observation for giving more weight to one set than to the other, and their mean has been adopted as the final result. This mean, **83° 24'**, is believed to be the latitude attained by Lieutenant Lockwood, and an uncertainty in its value not greater than *one minute* is considered to represent the accuracy of its determination.

May 20.—The longitude of Cape Britannia, obtained from these two sets of observations, 15°.1, is the same as that obtained from observations made on the outward journey, May 5.

This satisfactory result gives assurance of the good condition of the sextant throughout the expedition, and of the reliability of the mean of the watch corrections.

[Inclosure No. 3.]

ASTRONOMICAL OBSERVATIONS MADE BY LIEUTENANT LOCKWOOD ON THE NORTH COAST OF GREENLAND.

Comparison of watches.

Date.	Names of watches.	Time.	Date.	Names of watches.	Time.
1882.		h. m. s.	1882.		h. m. s.
April 16, p. m.	Lockwood	47 0	May 10, p. m.	Lockwood	1 9 17
	Ralston	30 10		Jewell	12 53 0
	Jewell	46 57	May 11	Lockwood	9 19 58
April 21, p. m.	Mine [Lockwood]	9 34 0		Brainard	8 57 0
	Ralston	9 33 0		Lockwood	9 22 33
	Jewell (?)	9 31 15		Jewell	9 6 0
April 25	Lockwood	7 26 0	May 12, p. m.	Lockwood	1 7 27
	Jewell	7 19 20½		Brainard	12 44 0 a. m.
	Ralston	7 34 30	May 13, p. m.	Lockwood	4 30 34
April 26, a. m.	Lockwood	6 41 0		Brainard	4 5 0
	Ralston	7 14 49		Lockwood	4 34 20
	Jewell	6 34 18½		Jewell	4 17 0
	Linn	6 41 30	May 14, p. m.	Lockwood	8 38 0
	Elison	- -- --		Jewell	8 20 27
	Brainard	(6 40 50)?		Lockwood	8 40 0
April 27, a. m.	Lockwood	7 13 0		Brainard	8 13 36
	Jewell	7 0 9½	May 15, a. m.	Lockwood	7 27 30
	Ralston	8 57 55		Jewell	7 10 0
April 28	Lockwood	11 56 0		Lockwood	8 23 0
	Jewell	11 42 47		Brainard	7 57 0
April 29, p. m.	Lockwood	4 45 0	May 18, a. m.	Lockwood	6 28 0
	Jewell	4 31 38		Jewell	6 8 39
	Lockwood	4 47 0		Brainard	5 58 37
	Brainard	4 27 20	May 19, a. m.	Lockwood	6 6 0
May 2, p. m.	Lockwood	4 50 0		Jewell	6 45 58
	Brainard	4 30 31		Brainard	5 34 48
	Lockwood	4 52 0	May 21, a. m.	Lockwood	9 45 0
	Jewell	4 37 30		Jewell	9 24 32
May 4, p. m.	Lockwood	10 49 0		Brainard	9 11 59
	Brainard	10 28 2	May 22, a. m.	Lockwood	8 20 0
May 5, p. m.	Lockwood	5 0 0		Jewell	7 58 47
	Jewell	4 45 4		Brainard	7 45 57
	Lockwood	7 2 43	May 23, p. m.	Lockwood	7 46 0
	Brainard	6 42 0		Brainard	7 10 33
May 6, p. m.	Lockwood	1 3 0		Lockwood	7 50 0
	Jewell	12 48 3		Jewell	7 27 58
May 8, a. m.	Lockwood	8 29 33	May 25, a. m.	Lockwood	2 55 0
	Brainard	8 7 0		Brainard	2 19 1
	Lockwood	8 36 0	May 26, p. m.	Lockwood	10 29 0
	Jewell	8 20 40		Jewell	10 6 22
May 10, p. m.	Lockwood	1 2 36	May 29, p. m.	Lockwood	9 9 37½
	Brainard	12 39 0		Brainard	8 27 0

CAPE BRITANNIA.

[May 4–5, 1882.]

Observations for latitude.

[May 4, 1882, midnight.]

		°	′
2 alt. ☉	=	18	41.0
Index correction	= −		2.8
2h′	=	18	38.2
h′	=	9	19.1
Semi-diam. + r − π	= −		21.7
h	=	8	57.4
p	=	73	48.1
Approx. φ	=	82	45.5

Observations for longitude.

[May 5, p. m.]

Barometer, 29.38; thermometer, + 9°.
Index correction: On arc, 34′; off arc, 30′.

		°	′	
2 alt. ☉, mean of 3 readings each of the upper and lower limbs	=	25	14.4	
Index correction	= −		2.0	
2 h′	=	25	12.4	
h′	=	12	36.2	
r − π	= −		4.4	
h	=	12	31.8	
φ	=	82	45.5	
p	=	73	33.9	
t	=	121	35.2	
		h.	m.	s.
App. time, p. m.	=	8	6	21
Eq. of time	= −		3	31
Mean time	=	8	2	50
Watch time	=	5	59	17
Watch slow	=	2	3	33
*Watch slow on Fort Conger	=	1	3	24
Long. east of Fort Conger	=		15°.0	

Watch slow on local mean time $2^h\ 3^m\ 51^s$.
Daily rate, 22^s—watch gaining.

		h.	m.	s.
Equation of time	= −		3	26
Mean time of app. midnight	=	11	56	34
Watch slow	=	2	3	51
Watch time of app. midnight	=	9	52	43

	° ′	Time.	t.	m.
2 alt. ☉	18 43	$10^h\ 4^m\ 47^s$	$12^m\ 4^s$	286.
2 alt. ☉	18 41	9 10	16 27	531.
2 alt. ☉	18 43	12 35	19 52	775.
2 alt. ☉	18 45	15 34	22 51	1024.
2 alt. ☉	17 42	19 51	27 8	1444.
2 alt. ☉	17 40	21 32	28 49	1628.
			m_0 =	948.

		°	′	″
Mean 2 alt. ☉	=	18	22	20
Index correction	= −		2	45
2 h′	=	18	19	35
h′	=	9	9	48
Reduc. to center + r − π	= −		11	20
Am_0	= −		1	56
h	=	8°	56′.5	
90° − δ	=	73	47.9	
φ	=	82°	44′.4	

Recomputation of longitude.

		°	′	
h	=	12	31.8	
φ	=	82	44.4	
p	=	73	33.9	
t	=	121	41.6	
		h.	m.	
App. time, p. m.	=	8	6.8	
Equation of time	= −		3.5	
Mean time	=	8	3.3	
Watch time	=	5	59.3	
Watch slow	=	2	4.0	
* Watch slow on Fort Conger	=	1	3.4	
Long. east of Fort Conger	=	1	0.6	= 15°.1

* NOTE.—Based on error and rate of J. B. L. [Lockwood] and W. J. [Jewell].

CAMP No. 1.

[May 6, 1882.]

Observations for latitude.

[May 6, noon.]

Thermometer, $+13^\circ$; barometer, 29.37.

	°	′
2 alt. ☉ =	48	7.0
Index correction = −		3.5
$2h'$ =	48	3.5
h' =	24	1.8
Semi-diam. $+ r - \pi$ = −		18.0
h =	23	43.8
ζ =	66	16.2
δ =	16	37.3
Approx. φ =	82	53.5

Index correction:
On arc, 37′; off arc, 30′.

Watch slow, $2^h\ 5^m\ 9^s$. [$2^h\ 5^m\ 29^s$]
Daily gain, 33^s. Rate $+ 33^s$, losing.

		h.	m.	s.			
Equation of time	=	0	3	34	2	5	29
Mean time of app. noon	=	11	56	26			
Watch slow	=	2	5	9			
Watch time of app. noon	=	9	51	17	9	50	57

2 alt. ☉ °	′	″	Time. h.	m.	s.
48	5	0	9	44	44
	7	0		53	11
	3	0		59	16
	0	0	10	18	5

	°	′	″
2 alt. ☉ =	48	3	45
Index cor. = −		3	30

	°	′
h' =	24	0.1
Semi-diam. $+ r - \pi$ = −		18.0
Am_0 = +		0.9
h =	23	43.0
ζ =	66	17.0
δ =	16	37.5
φ =	82	54.5

Observations for longitude.

[May 6, a. m.]

Thermometer, $+ 6^\circ$; barometer, 29.34.

	°	′
2 alt. ☉ (mean of three readings each of the upper and lower limbs) =	27	17.7
Index correction (assumed) = −		2.7
$2h'$ =	27	15.0
h' =	13	37.5
$r - \pi$ =		4.1
h =	13	33.4
φ =	82	53.5
p =	73	28.0
t =	113	46.7

		h.	m.	s.
App. time, a. m.	=	4	24	53
Equation of time	= −		3	33
Mean time	=	4	21	20
Watch time	=	2	16	00
Watch slow	=	2	5	20
Watch slow on Fort Conger	=	1	3	30
Longitude east of Fort Conger	--	1	1	50

Recomputation of longitude.

	°	′
h =	13	33.4
φ =	82	54.5
p =	73	28.0
t =	113	55.0

		h.	m.
App. time, a. m.	=	4	24.3
Equation of time	= −		3.5
Mean time	=	4	20.8
Watch time	=	2	16.0
Watch slow	=	2	4.8
Watch slow on Fort Conger	=	1	3.5
Long. east of Fort Conger	=	1	1.3 $= 15^\circ.3$.

CAMP No. 3.

[May 8, 1882.]

Observations for latitude.

[May 8, noon.]

	° ′	
Longitude assumed	= 47 47	west of Greenwich.
Latitude assumed	= 83 11	
Daily watch rate	= + 22	seconds, watch losing.

	h. m. s.		
Equation of time	= − 3 42	Barometer	29.38
Mean time of app. noon	= 11 56 18	Thermometer +	11°
Watch slow on local time	= 2 13 2	Index correction:	
		On arc. ′	Off arc. ′
Watch time of app. noon	9 43 16	35	29
		34	31

Limb.	2 alt. ⊙ ° ′	Time. h. m. s.
⊙	48 40	9 46 30
⊙	39	52 56
⊙	37	10 1 14
⊙	32	11 44
⊙	47 26	14 29
⊙	24	19 11
⊙	22	22 29

	48 5.7
Index correction = −	2.3
$2h' =$	48 3.4
$h' =$	24 1.7
Reduc. to center $+ r - \pi = -$	4.4
$Am_0 = +$	2.9
$h =$	24 0.2
$\zeta =$	65 59.8
$\delta =$	17 10.5
$\phi =$	83 10.3

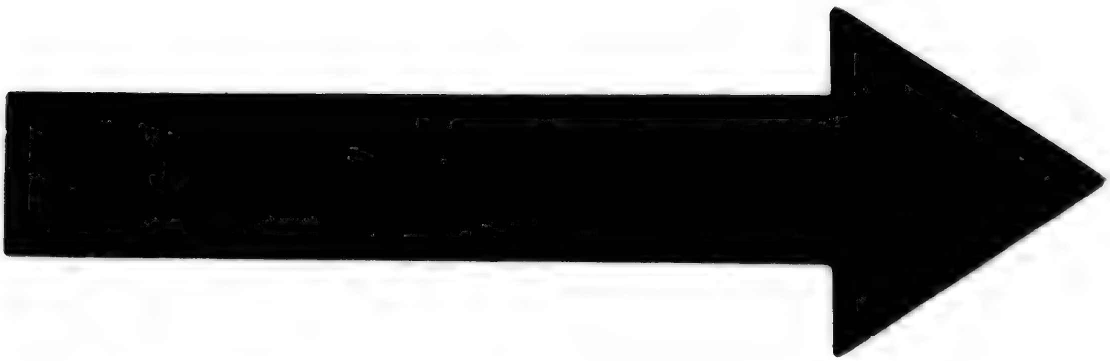
[May 8, midnight.]

	h. m. s.	
Equation of time	= − 3 44	Index correction:
Mean time of app. midnight	= 11 56 16	On arc, 35′ 30″; off arc, 28′ 30″
Watch slow	= 2 13 13	
Watch time of midnight	= 9 43 3	

	° ′	Time.	t.	m.
2 alt ⊙	21 34	9 22 55	− 20ᵐ 8ˢ	795
⊙	30	29 14	− 13 49	375
⊙	36*	56 9	+ 13 6	337
				$m_0 = 502$

	21 33.3
Index correction = −	3.5
$2h' =$	21 29.8
$h' =$	10 44.9
Semi-diam. $+ r - \pi = -$	21.0
$Am_0 = -$	1.0
$h =$	10 22.9
$p =$	72 41.8
$\phi =$	83 4.7
ϕ (at noon) =	83 10.3
Mean $\phi =$	83 7.5

*Owing to high wind and drifting snow, the contacts are not considered accurate, especially the third.



STATION BETWEEN CAMPS IV AND V.

[May 10, 1882.]

Observations for latitude.

	° ′
2 alt. ☉ =	49 30
Index correction = −	1
2h′ =	49 29
h′ =	24 44.5
Semi-diam. + r − π = −	18.0
h =	24 26.5
ζ =	65 33.5
δ =	17 41.7
Approx. φ =	83 15.2

Daily rate, — 21ˢ; watch gaining.

	h. m. s.	
Equation of time = −	0 3 48	
Mean time of app. noon =	11 56 12	
Watch slow =	2 15 13	[2 29 12]
Watch time of app. noon =	9 40 59	[9 27 00]

*2 alt. ☉

° ′ ″	Time h. m. s.
49 30 0	8 59 26
49 30 0	9 10 11

t.	m.	t.	m.
41 33	3353.6	27 34	1490
30 48	1859.8	16 49	555
	m_0 = 2607		m_0 = 1022

	° ′	° ′
2 alt. ☉ =	49 30	
Index cor. (assumed)‡ =	− 1	
2 h′	49 29	
h′ =	24 44.5	
Semi-diam. + r − π =	− 18.0	
Am_0 =	+ 5.3	+ 2.1
h =	24 31.8	24 28.6
ζ =	65 28.2	65 31.4
δ =	17 41.7	17 41.7
φ =	83 10	83 13.1

Observations for longitude.

(May 10, a. m.)

Barometer, 29.45; thermometer, 11°.

Index correction:
On arc, 32′; off arc, 30′.

	° ′	° ′
2 alt. ☉, mean of three readings =	35 20.7	
Index correction = −	1.0	
2 h′	35 19.7	
h′ =	17 39.8	
Semi-diam. + r − π =	12.8	
h =	17 27.0	17 52.6
φ =	83 15.2	
p =	72 21.7	
t =	90 22.8	86 53.1
	h. m.	h. m.
App. time a. m. =	5 58.5	6 12.5
Equation of time = −	3.8	− 3.8
Mean time =	5 54.7	6 8.7
Watch time =	3 39.4	3 39.4
Watch slow =	2 15.3	2 29.3
Watch slow on Fort Conger =	1 5.8	1 5.8
Longitude east of Fort Conger =	1 9.5	1 23.5

Recomputation of longitude.

	° ′
h =	17 52.6
φ =	83 13.1
p =	72 21.7

	h. m.
App. time, a. m. =	6 12.4

Long. east of Fort Conger, 1^h 23.4^m = 20.8°.

Observation for magnetic variation.†

	h. m. s.
Watch time	3 22 34
Watch slow	[2 28 54]
Sun's bearing 15° E. of S.	

* Made hurriedly on floe west of Shoe [Mary Murray] Island; sun shone dimly through clouds for a few minutes about noon, very windy with drifting and falling snow. Observation unsatisfactory in every respect.—J. B. L.

† The time of this observation is uncertain and result therefore not reliable. Not reduced.

‡ Index correction assumed.—E. I.

SHOE [MARY MURRAY] ISLAND.

[May 12, 1882.]

Observations for latitude.

Sun much obscured by clouds and colored glasses not used; image in mercury very indistinct.

	°	′
2 alt. $\overline{\odot}$ =	50	24.5
Index correction = −		3.5
$2h'$ =	50	21.0
h' =	25	10.5
Semi-diam. $+ r - \pi$ = −		17.9
h =	24	52.6
ζ =	65	7.4
δ =	18	12.5
ϕ =	83	19.9

Observations for longitude, p. m.

Barometer, 29.90; thermometer, 7°.
Index correction:

On arc. ′	Off arc. ′ ″
38	27 30
38	28

	°	′
2 alt. $\odot$ (mean of three readings each of the upper and lower limbs) =	42	15.3
Index cor. = −		5.1
$2h'$ =	42	10.2
h' =	21	5.1
$r - \pi$ = −		2.5
h =	21	2.6
ϕ =	83	19.9
p =	71	44.9

	h.	m.	s.
App. time p. m. =	4	16	47
Equation of time =		3	52
Mean time =	4	12	55
Watch time =	1	38	21
Watch slow on local time =	2	34	34
Watch slow on Fort Conger =	1	5	13
Long. east of Fort Conger =	1	29.4	

Barometer, 29.39; thermometer, 9°.
Index correction:

On arc. ′	Off are. ′
36	30
36	28

Watch rate = + 55s, watch losing.

	h.	m.	s.
Equation of time =		3	52
Mean time of app. noon =	11	56	8
Watch slow =	2	34	24
Watch time of app. noon =	9	21	44

Limb.	2 alt $\odot$. °	′	″	Time. h.	m.	s.
$\overline{\odot}$	50	18	30	8	46	53
$\overline{\odot}$		24	30		56	28
$\overline{\odot}$		24	30	9	7	9
$\overline{\odot}$		28	00		19	17
$\overline{\odot}$		24	00		28	53
$\overline{\odot}$		11	00		38	21
$\underline{\odot}$	49	24	00		41	39
$\underline{\odot}$	49	17	00		51	44
Mean =	50	6	26			
Index cor. = −		3	30			
$2h'$ =	50	2	56			
h' =	25	1.5				
Reduction to center $+ r - \pi$ = −		10.0				
h =	24	51.5				
ζ =	65	8.5				
Am_0 = −		1.8				
ζ_0 =	65	6.7				
δ =	18	12.4				
ϕ =	83°	19′.1				

Recomputation of longitude.

	°	′		h.	m.
h =	21	2.6	App. time =	4	17.0
ϕ =	83	19.1	Mean time =	4	13.2
p =	71	44.9	Watch time =	1	38.4
			Watch slow =	2	34.8
			Watch slow on Fort Conger =	1	5.2

Longitude east of Fort Conger = 1 29.6 = 22°.4

BETWEEN SHOE [MARY MURRAY] ISLAND AND FARTHEST.

[May 13, 1882.]

Observations for longitude.

Sun dimly visible through clouds; colored glasses not used.

Barometer, 29.38; thermometer, + 12°.

		°	′
2 alt. (mean of three reading, each of the upper and lower limbs)	=	44	4.1
Index correction	= −		3.9
$2h'$	=	44	0.2
h'	=	22	0.1
$r - \pi$	= −		2.4
h	=	21	57.7
Assumed ϕ	=	83	21.8
p	=	71	35.1
		°	′
t	=	56	42.0

Index correction:

On arc. ′	″	Off arc. ′	″
35		27	30
36	30	28	30

		h.	m.
App. time, a. m.	=	8	13.2
Equation of time	= −		3.9
Mean time	=	8	9.3
Watch time	=	5	30.2
Watch slow	=	2	39.1
Watch slow on Ft. Conger	=	1	7.1
Longitude east of Fort Conger	=	1	32.0 = 23°.0

FARTHEST.

[May 15, 1882.]

Observations for time.

Watch rate [for 12 hours] = − 22 s., watch gaining.
Thermometer, a. m. + 12°; p. m. (in sun) + 29°.

		h. m. s.
Watch time, a. m.	=	5 23 22
" p. m.	=	13 4 6
$2t$.	=	7 40 44
Correction for rate	= −	7[−14]
Elapsed time	=	7 40 37
T_0	=	9 13 44
ΔT_0	= −	1 15
Watch time of app. noon	=	9 12 29
Equation of time	= −	3 52
Watch time of mean noon	=	9 16 21
Watch slow on local time	=	2 43 39

Index correction, a. m.: On arc.	Off arc.	Index correction, p. m.: On arc.	Off arc.
38′ 30″	26′	36′	28′
38		37	27

	a. m. ° ′	p. m. ° ′
2 alt. ⊙ (mean of three readings each of the upper and lower limbs) =	44 52.7	44 52.7
Index cor. = −	5.9	−4.5
$2h'$ =	44 46.8	44 48.2
h' =	22 23.4	22 24.1
$r - \pi$ = −	2.2	−2.2
h =	22 21.2	22 21.9
$\Delta' h$ = +	0.7	

$a = A.\ \Delta'\delta \tan \phi$

$b = B.\ \Delta'\delta \tan \delta$

ϕ (assumed) $= 83° \ 20'.7$

$\Delta' T_0 = a + b = -1^m \ 30^s$

$$\Delta'' T_0 = \frac{\Delta' h \cos h}{30 \cos \phi \cos \delta \sin t} = 15^s$$

$\Delta T_0 = \Delta' T_0 + \Delta'' T_0 = -1^m \ 15^s$

Watch *No. 10046* [*Lockwood*] on Fort Conger.

		m. s.
Slow Apr. 14, a. m.	=	50 28
Slow June 1, p. m.	=	38 28
Gain in 48.5 days	=	12 00

Daily gain 14.8^s.

Watch, *Jewell*, on Fort Conger.

	m. s.
Slow Apr. 16, p. m.	49 56
Slow June 1, p. m.	63 1
Loss in 46 days.	13 5

Daily loss 17.1^s

		h. m. s.
**P. W.* [Pocket watch?] slow on local time, May 15, a. m.	=	2 43 39
P. W.—No. 10046	= −	26 00
No. 10046 slow on local time	=	2 17.6
No. 10046 slow on Fort Conger	=	42.8
Difference of time	=	1 34.8

		h. m. s.
P. W. slow on local time	=	2 43 39
P. W.—Jewell	= −	8 30
Jewell slow on local time	=	2 35.1
Jewell slow on Fort Conger	=	58.1
Difference of time	=	1 37.0

Mean = $1^h \ 35^m.9$
Longitude east of Fort Conger = 24°.0
Longitude west of Greenwich = 40° 46′

*Same as *Brainard*.

FARTHEST.

[May 15, 1882.]

Observations for latitude.

Assumed latitude 83° 20′.7 Thermometer + 14° Weather bright and clear.
Watch rate [for 12 hours] = − 22ˢ, watch gaining; $\odot$'s δ at app. noon = 18° 56′.0.
$\Delta\delta = +\ 35''.2$.

$A = \dfrac{\kappa^1 \cos\phi \cos\delta}{\sin(\phi-\delta)} = .1215$ $\theta = \dfrac{[9.4059]\,\Delta\delta}{A} = 0^h\ 1^m.2$ $y = \dfrac{A.\ 2\sin^2\frac{\theta}{2}}{\sin 1''}$ y = not appreciable.

$B = A^2 \cot \zeta$.

Watch time of app. noon = 9 12 .5

Watch time of max. alt. = 9 13 .7

Index correction:

On arc.	Off arc.
34′ 30″	29′
36	29

No.	Limb.	2 alt. $\odot$	Index correction.	Time.	t.	Am.	Bn.	$r-\pi$.	Obs'd ζ.	ζ_0.	v.	vv.
		° ′	′	h. m. s.	m.	′			° ′	° ′		
1	$\overline{\odot}$	51 25.0	−3.1	8 17 56	55.8	−12.3	Not appreciable.	2.0	64 34.9	64 24.6	−2.1	4.41
2	$\overline{\odot}$	29.5	3.1	22 46	50.9	10.3		2.0	32.6	24.3	−2.4	5.76
3	$\overline{\odot}$	25.0	3.1	26 33	47.2	8.8		2.0	34.9	28.1	+1.4	1.96
4	$\overline{\odot}$	32.5	3.1	30 27	43.3	7.4		2.0	31.2	25.8	−0.9	.81
5	$\overline{\odot}$	32.5	3.1	34 8	39.6	6.2		2.0	31.2	27.0	+0.3	.09
6	$\overline{\odot}$	38.0	3.1	38 37	35.1	4.9		2.0	28.4	25.5	−1.2	1.44
7	$\underline{\odot}$	50 39.0	3.1	48 4	25.7	2.6		2.0	26.2	25.6	−1.1	1.21
8	$\underline{\odot}$	41.0	3.1	9 1 7	12.6	0.6		2.0	25.2	26.6	−0.1	.01
9	$\underline{\odot}$	42.0	3.1	6 44	7.0	0.2		2.0	24.7	26.5	−0.2	.04
10	$\underline{\odot}$	38.0	3.1	12 52	0.9	0.0		2.0	26.7	28.7	+2.0	4.00
11	$\underline{\odot}$	43.0	3.1	18 21	4.6	0.1		2.0	24.2	26.1	−0.6	.36
12	$\underline{\odot}$	38.5	3.1	30 29	16.8	1.1		2.0	26.5	27.4	+0.7	.49
13	$\overline{\odot}$	51 39.0	3.1	34 52	21.1	1.8		2.0	27.9	28.1	+1.4	1.96
14	$\overline{\odot}$	37.0	3.1	41 10	27.5	3.0		2.0	28.9	27.9	+1.2	1.44
15	$\overline{\odot}$	32.5	3.1	51 50	38.1	5.8		2.0	31.2	27.4	+0.7	.49
16	$\underline{\odot}$	50 25.0	3.1	58 48	45.1	8.1		2.0	33.2	27.1	+0.4	.16
17	$\underline{\odot}$	22.5	3.1	10 3 52	50.1	10.0		2.0	34.5	26.5	−0.2	.04
18	$\underline{\odot}$	15.0	−3.1	9 42	56.0	−12.4		2.1	38.2	27.9	+1.2	1.44

Mean $\zeta_0 = 64°\ 26'.7 \pm 0.2$
$\phi = 83\ \ 22\ .7$

FARTHEST.

[May 14 and 15, 1882.]

Observations for time.

May 14, p. m.		May 15, a. m.	
Thermometer, +15°.		Thermometer in sun, +23°. Thermometer in shade, +14°.	
Index correction: On arc. ′ ″ / Off arc. ′		Index correction: On arc. ′ / Off arc. ′	
35 00 / 28		34 / 30	
37 30 / 26		38 / 29	
2 alt. ⊙ (mean of three readings each of the upper and lower limbs) =	° ′ 28 57.9	2 alt. ⊙ (mean of three readings each of the upper and lower limbs) =	° ′ 31 51.2
Index correction = −	4.6	Index correction = −	3.3
$2h'$ =	28 53.3	$2h'$ =	31 47.9
h' =	14 26.7	h' =	15 54.0
$r-\pi$ = −	3.8	$r-\pi$ = −	3.2
h =	14 22.9	h =	15 50.8
ϕ =	83 22.8	ϕ =	83 22.8
p =	71 13.0	p =	71 8.6
t =	130 54.0	t =	116 5.6
	h. m.		h. m.
App. time, p. m. =	8 43.6	App. time, a. m. =	16 15.6
Equation of time = −	3.9	Equation of time = −	3.9
Mean time =	8 39.7	Mean time =	16 11.7
Watch time =	5 56.7	Watch time =	13 26.3
Watch slow =	2 43.0	Watch slow =	2 45.4

h. m.
Mean = 2 44.2

FARTHEST.

[May 14, 1882.]

Subpolar circummeridian observations for latitude.

φ (approx.) $= 83° 22'.8$ $\lambda = 40° 46'$ W. of G.   Thermometer, $+17°$.

Watch slow $= 2^h\ 44.2^m$.   Watch rate [for 12 hours] $= -22^s$, watch gaining.   Index correction:

$$A = \frac{k' \cos\varphi \cos\delta}{\sin(\varphi - \delta)}$$

Log. $A = 9.0820$

$$\theta = [94059] \frac{\Delta\delta}{A}$$

m. s.
$\theta =$ 1 15

$\delta = 18° 49'.0$. $\Delta\delta = +35''.6$.

	h. m.
Equation of time	$= -0$ 3.9
Mean time of app. midnight	$=$ 11 56.1
Watch slow	$=$ 2 44.2
Watch time of app. midnight	$=$ 9 11.9
$\theta =$	1.2
$T_0 =$	9 13.1

On arc.	Off arc.
′	′
35	28
37	27

	Cover.	Limb.	2 alt. ☉	Index correction.	Chro. time.	t.	Am.	$r - \pi$.	Obs'd ζ.	ζ_0.	v.	vv.
			° ′	′	h. m. s.	m.	′	′	° ′	° ′	′	
1	Not used.	$\overline{\odot}$	25 14.5	−3.5	9 25 15	12.2	+ 0.6	+4.4	77 40.4	77 45.4	−0.9	.81
2	Not used.	$\overline{\odot}$	13.0	3.6	9 27 30	14.6	0.8	4.4	41.1	46.3	0.0	.00
3	Not used.	$\overline{\odot}$	12.5	3.7	9 30 55	17.8	1.3	4.4	41.4	47.1	+0.8	.64
4	Not used.	$\overline{\odot}$	16.0	3.9	9 39 01	25.9	2.7	4.4	39.8	46.9	+0.6	.36
5	Not used.	$\underline{\odot}$	24 15.0	4.0	9 41 03	28.0	3.1	4.6	38.7	46.4	+0.1	.01
6	Not used.	$\underline{\odot}$	17.0	4.1	9 44 26	31.3	3.9	4.6	37.7	46.2	−0.1	.01
7	Not used.	$\underline{\odot}$	21.0	4.3	9 48 20	35.2	4.9	4.6	35.8	45.3	−1.0	1.00
8	Direct.	$\underline{\odot}$	23.0	4.4	9 52 01	38.9	6.0	4.6	34.9	45.5	−0.8	.64
9	Direct.	$\underline{\odot}$	27.0	4.6	10 00 58	47.9	9.0	4.6	32.9	46.5	+0.2	.04
10	Direct.	$\underline{\odot}$	28.5	4.7	10 04 29	51.4	10.4	4.6	32.2	47.2	+0.9	.81
11	Direct.	$\underline{\odot}$	36.0	4.9	10 10 09	57.0	12.8	4.6	28.6	46.0	−0.3	.09
12	Direct.	$\overline{\odot}$	25 38.0	−5.0	10 11 58	58.9	+13.6	+4.3	29.3	47.2	+0.9	.81

Mean $\zeta_0 =$	77° 46′.3 ± 0.13
$h =$	12 13.7
$p =$	71 11.0
$\varphi =$	83 24.7
φ, May 15 $=$	83 22.7
Mean $\varphi =$	**83 24**

NORTH CAPE.

[May 19, 1882.]

Observations for latitude.

λ, approx. = $3^h\ 18^m$ west of Greenwich.
ϕ, approx. = $82°\ 50.2'$.
Watch slow $2^h\ 12^m\ 43^s$; watch rate + 44^s.
Barometer (assumed) = 29.6.
Thermometer = 11.

Equation of time	= −		3	44
Mean time of app. midnight	=	11	56	16
Watch slow	=	2	12	43
Watch time of app. midnight	=	9	43	33

Index correction:

On arc. ′	Off arc. ′	″
33	28	30
34	27	00

Limb.	2 alt. ⊙ °	′	Time. h.	m.	s.
⊙	26	29	9	11	35
⊙		23		17	29
⊙		22		21	44
⊙	25	15		26	1
⊙		16		30	15
⊙		13		37	44
⊙		16		52	6
⊙		17	10	2	6
⊙		21		12	55

2 alt. ⊙ =	25	39.1
Index correction = −		2.9
$2h'$ =	25	36.2
h' =	12	48.1
½ semi-diameter $- r + \pi$ = +		1.0
Am_o = −		1.7
h =	12	47.4
p =	70	3.6
ϕ =	82° 51′.0	

ON FLOE ¼ MILE SOUTHWEST FROM CAPE BRITANNIA.

[May 20, 1882.]

Observations for longitude.

Weather clear and very calm; sun very bright.

$\phi = 82^\circ\ 44.1'$. Longitude (assumed) = 3h. 19m., W. of G.

	A. M.		P. M.	
Index correction:	On arc.	Off arc.	On arc.	Off arc.
	′	′		
	36	27	36′	27′
	36	28		

	A. M.	P. M.
	° ′	° ′
2 alt. ☉, (mean of three readings each of the upper and lower limbs) =	45 45.6	30 46.0
Index correction =	− 4.2	− 4.5
$2h'$ =	45 41.4	30 41.5
h' =	22 50.7	15 20.7
$r-\pi$ =	− 2.3	− 3.6
h =	22 48.4	15 17.1
ϕ =	82 44.1	82 44.1
p =	69 59.5	69 52.8
t =	66 3.8	130 48.2
	h. m.	h. m.
App. time =	19 35.7	8 43.2
Equation of time =	− 3.7	− 3.7
Mean time =	19 32.0	8 39.5
Watch time =	17 18.7	6 27.0
Watch slow =	2 13.3	2 12.5

	h. m.
Mean =	2 12.9
Watch slow on Fort Conger =	1 12.6
Longitude east of Fort Conger =	1 0.3 = 15°.1

[Inclosure No. 4.]

Astronomical observations by field parties of the Lady Franklin Bay Expedition.

INTERIOR OF GRINNELL LAND.

Date.	Observer.	For—	By—	Results.	Localities.
1882.				° ′	
Apr. 27	Greely	Longitude	A. M. sight	λ = 1 29 W. of Conger.	North side Conybeare Inlet.
29	do	do	do	λ = 3 12 W. of Conger.	North arm Chandler Fiord, near mouth of Ruggles River.
29	do	Latitude	C. M. set	φ = 81 37.5	
30	do	do	Subpolar set	φ = 81 47.7	Junction Lake Hazen and Ruggles River.
May 1	do	do	C. M. set	φ = 81 47.2	
		Mean 30th and 1st		φ = 81 47.4	
Apr. 30	do	Longitude	P. M. sight	λ = 5 5 W. of Conger.	
May 3	do	do	do	λ = 5 4 W. of Conger.	
4	do	do	A. M. sight	λ = 5 5 W. of Conger.	
		Mean 30th, 3d, and 4th		λ = 5 5 W. of Conger.	
3	do	Longitude	A. M. sight	λ = 6 56 W. of Conger.	Two miles southeast of Henrietta Nesmith Glacier.
4	do	Latitude	A. M. set	φ = 81 42.9	Camp X, Ruggles River.

NORTH COAST OF GREENLAND.

Date.	Observer.	For—	By—	Results.	Localities.
1882.				° ′	
May 4	Lockwood	Latitude	Subpolar set	φ = 82 44	Cape Britannia.
6	do	do	Cir. mer. set	φ = 82 54.5	
6	do	Longitude	Morning sight	λ = 15 3 E. of Conger.	
8	do	Latitude	C. M. set	φ = 83 10.3	
8	do	do	Subpolar set	φ = 83 7.5	
10	do	Longitude	Morning sight	λ = 20 8 E. of Conger.	
12	do	Latitude	C. M. set	φ = 83 19	
12	do	Longitude	P. M. sight	λ = 22 4 E. of Conger.	
13	do	do	do	λ = 23 0 E. of Conger.	
15	do	do	A. M. and P. M., mean.	λ = 24 0 E. of Conger.	Lockwood Island. Farthest North and East.
14	do	Latitude	Subpolar set	φ = 83 24.7	
15	do	do	C. M. set	φ = 83 22.7	
		Mean 14th and 15th		φ = 83 23.7	
19	do	Latitude	Subpolar set	φ = 82 51	Cape Frederick.
20	do	Longitude		λ = 15 1 E. of Conger.	One quarter of a mile southwest of Cape Britannia.

INTERIOR OF GRINNELL LAND.

Date.	Observer.	For—	By—	Results.	Localities.
1882.				° ′	
June 25	Greely	Latitude	C. M. set	φ = 81 45	Three miles west of Lake Heintzelman.
26	do	do	do	φ = 81 49	Divide between Lake Hazen and Black Rock Vale.
26	do	Longitude	P. M. set	λ = *	Lake Appleby.
28	do	do	do	λ = 5 5 W. of Conger †	
28	do	Latitude	C. M. set	φ = 81 47.4 †	
29	do	do	do	φ = *	
29	do	Longitude	P. M. set	λ = *	Cobb River.
July 1	do	do	do	λ = *	Very Valley.
3	do	Latitude	C. M. set	φ = *	
4	do	Longitude	A. M. set	λ = *	
4	do	do	P. M. set	λ = *	
5	do	do	A. M. set	λ = *	
6	do	do	do	λ = *	Camp VIII.
6	do	Latitude	C. M. set	φ = *	Camp XIV.

* This value obtained from large scale map made at Fort Conger after return of sledge party.

† Values obtained in May which agreed with those in July.

Astronomical observations by field parties of the Lady Franklin Bay Expedition—Continued.

CROSSING OF GRINNELL LAND.

Date.	Observer.	For—	By—	Results.	Localities.
1883.				° ′	
May 1	Lockwood	Latitude	C. M. set	ϕ = 80 59.7	Glacier.
2	do	Longitude	A. M. set	λ = 70 41 W.	
5	do	do	do	λ = 70 31 W.	Head Beatrix Bay.
5	do	Latitude	C. M. set	ϕ = 81 9.8	
7	do	do	do	ϕ = 81 17	
7	do	Longitude	P. M. set	λ = 70 46 W.	
8	do	Latitude	C. M. set	ϕ = 81 18.4	First camp, Musk Ox Valley.
8	do	Longitude		λ = 71 1 W.	
9	do	Latitude	C. M. set	ϕ = 81 15.6	Second camp, Musk Ox Valley.
9	do	Longitude	A. M. set	λ = 71 46 W.	
10	do	do	do	λ = 73 41 W.	Third camp, Musk Ox Valley.
10	do	Latitude	C. M. set	ϕ = 81 8.2	
11	do	do	do	ϕ = 81 5.2	Just west of crest of Grinnell Land.
11	do	Longitude	P. M. set	λ = 74 41 W.	
12	do	do	do	λ = 76 13 W.	Lake near head of Greely Fiord.
12	do	Latitude	C. M. set	ϕ = 80 56.5	
14, 15	do	Longitude	A. M. and P. M. set, mean.	λ = 78 26 W.	Greely Fiord, near Western Sea.
14	do	Latitude	C. M. set	ϕ = 80 48.6	Farthest west.

MISCELLANEOUS.

Date.	Observer.	For—	By—	Results.	Localities.
1883.				° ′ ″	
May 8	Israel	Latitude	C. M. set	ϕ = 81 32 27.7	Cape Baird.
8	do	Longitude	A. M. and P. M. obs.	λ = 57.5 E. of Conger.	

APPENDIX No. 136.—*Hydrography.*

[The subject of sea temperatures, &c., will be found incorporated in the meteorological report under that head.—A. W. GREELY, *Lieut.*]

OBSERVATIONS ON THE VELOCITY OF SOUND AT LOW TEMPERATURES.

APPENDIX No. 137.

A large number of observations were made with a view of accurately determining whether the increment of velocity of sound in air with increasing warmth is constant at very low temperatures.

The experiments were made by the discharge of a rifle or revolver, and the recording of both flash and report by means of a chronograph, which used in astronomical observations recorded seconds by an electrical circuit and a circuit-breaking chronometer.

In order to make the record comparable the observations were all made by the same person. The measurement of the elapsed time was made by one person, and after November 12, 1882, were measured independently by the astronomer, Sergeant Israel, and in cases where the two measurements did not agree to one hundredth of a second, they were remeasured or thrown out entirely.

Two sets of observations were made the first winter, which gave generally satisfactory results, although they could not be absolutely accurate as the distance 5406 feet [1647.72^m] was measured by a surveyor's chain. The results were as follows:

Date.	Temperature.	Distance.		Shots.	Velocity per second.		Rate of decrease each degree.*		Remarks.
1882.		*Feet.*	*Meters.*		*Feet.*	*Meters.*	*Fahr.*	*C.*	
Feb. 13	−58° (−50° C.)	5406	1647.72	8	1011.4	308.27	.892	1.606	Calm and clear.
Feb. 14	−50°.1 (−45.6 C.)	5406	1647.72	5	999.0	304.49	1.129	2.032	Do.

*The rate of decrease has been calculated on the assumption that sound travels 1091.67 feet [332.73^m] per second at the temperature of 32° [0.0 C.]. These are the velocities given by Van Der Koch 1091.67 (±3.7′) feet [332.73^m] in dry air.

The general mean indicated a decrease of 0.983 feet [.302^m] for each degree (1.790 feet [.546^m] for each degree centigrade), against 1.110 feet [.340^m] for each degree which has been determined at higher temperatures. As the difference could have easily resulted from errors inseparable from the method of determining the distance, the experiments were continued the second winter with greater accuracy.

Base lines were carefully measured on the fast ice by Sergeant Israel, who determined the distance between the firing and observing station by two different sets of angles. As the two results agreed within a foot [.305^m] the mean 4,197.0 feet [1,279.22^m] was adopted. This distance was the greatest which could be adopted between points convenient of access.

In firing, the muzzle of the rifle was held over the stake, or in firing at right angle was over it.

The entire sets of observations, good or bad, have all been reproduced, although two sets, November 2 and 3, 1882, have not been used in calculating means, being considered unreliable owing to snow impeding the action of the key of the chronograph.

The different sets have been combined with each other, so that observations are brought together where the temperatures do not deviate over 2°.1 (1°.2 C.) in any case, and generally but 1° (0°.6 C.) from the mean.

Results of observations on the velocity of sound at Fort Conger.

Distance 4,197.0 feet [1,279.22^m].

Number of observations.	Temperature.		Velocity per second.		Decrease for each degree Fahr.	Decrease for each degree centigrade.
	Fahr.	*C.*	*Feet.*	*Meters.*	*Feet.*	*Meters.*
36	17.6	−8.0	1,077.69	328.47	0.971	0.532
17	2.6	−16.3	1,053.81	321.19	1.288	0.708
20	− 8.1	−22.3	1,073.05	327.06	0.464	0.254
18	−14.2	−25.7	1,036.95	316.06	1.170	0.649
76	−19.6	−28.7	1,033.29	314.94	1.131	0.620
8	−25.6	−32.0	1,008.89	307.50	1.437	0.781
96	−32.5	−35.8	1,016.75	309.90	1.162	0.638
68	−39.8	−39.9	1,015.23	309.44	1.065	0.585
74	−44.9	−42.7	993.80	302.90	1.463	0.610
131	−52.6	−47.0	1,007.09	306.95	1.000	0.548
544	−32.1	−35.6	1,021.23	311.26	1.099	0.603

According to these results the velocity of sound at a temperature of −32.1 [−35.6 C.] is 1,021.23 feet [311.26^m] per second. This gives (assuming sound to travel 1,091.67 feet [332.73^m] in dry air at 32° [0° C.]) a decrease of 1.099 feet per second for each degree Fahr. [0.603^m for each degree centigrade].

As this differs but 0.011 foot [0.003344^m] from the results obtained at higher temperatures, it is probable that the rate for moderate distances continues constant at least from 32° [0° C.] to −54° [−48° C.].

The variations in different sets from this rate of decrease cannot always be satisfactorily explained. The range over which the sound passed was along the coast line, and almost entirely over land. It was necessarily assumed that the temperature of the intervening mass of air was constant, and that it coincided with the temperature of the air as shown by the regular thermometer in the instrument shelter, which was a hundred yards [91^m] distant, and about six feet [2^m] higher above the sea.

The moisture of the air could not be determined, as the readings of the wet bulb were nearly always higher than the dry bulb. The amount of moisture in air at the low temperatures in which the observations were made must have been very small.

During these sets of observations light snow was falling, under which conditions the velocity appeared to be slightly diminished. In clear, calm weather, however, there were occasions on which the velocity varied from the mean to a greater degree than during snow.

On January 19, 1883, an experiment was made to determine whether sound traveled with the same velocity in both directions. Sergeant Brainard fired a revolver at the home station, while the regular observer broke the circuit at the flash, and later broke it again at the flash and report from the distant station. Sergeant Long at the distant station fired only when he heard the report of the revolver at the home station.

The mean of fifty practice observations showed that Sergeant Long fired 0.226 second after hearing a designated sound. The two velocities as deduced from eighteen shots substantially agreed, after applying the correction for personal equation, being 976.75 feet [297.71^m] per second, against 977.87 feet [298.05^m]. This velocity was relatively the slowest of the entire series, and would have been regarded as doubtful had not the rate in the two directions so closely agreed. The air was clear and calm, not a breath stirring at either station. The temperature, −43.°1 [−41°.7 C.], was determined five minutes before the first shot, and the observations covered fifteen minutes. The temperature forty minutes after the observations had fallen 4°.3 [2°.4 C.], which accounted for only one-sixth of the retardation. If it had been at high tide it would have seemed possible that moist air from salt water forced up through adjacent tidal cracks had drifted into the line of sound, but the experiments took place at midtide and in the neaps, when tidewater was almost unknown.

On several occasions a second observer was sent out to give the command for firing, in order to note how much later the voice could be heard, or in other words how much the velocity of sound increased with loudness. The command "fire," which preceded the act by a fourth of a second on an average, was always heard before the report of the gun.

It seems well to here correct misstatements under acoustics in the last edition of the Encyclopedia Britannica, or to Parry's experiences on this last point. The experiments were made at Winter Island, February 9, 1822, at scarcely over a mile, and not "at a distance of 2½ miles." The gun instead of being "invariably" heard before the word of command was heard on this day only, and but several times out of fifteen reports. The following conditions obtained: Light wind against the sound, barometer 28.84 [732.52^{mm}] (lowest registered from which may be inferred storm conditions of the air); clear sky; temperature −25° [−31.7° C.]; sound condition (on basis of 1.110 change for each degree) unfavorable.

Experiments on the velocity of sound.

October 5, 1882, 5.15 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	3.831	Temperature: −8.6° [−22.6° C.]. Distance: 4,197 feet [1,279.22m]. Wind: Calm at both stations. Weather: Clear at both stations. Weapon: Springfield army rifle.
2	3.954	
3	3.926	
4	3.799	
5	3.909	
6	3.867	
7	3.978	
8	3.890	
9	4.075	
10	3.831	
Mean	3.9060	
Chron. corr	−.011	
Corr. mean	3.8950	Mean velocity per second 1,077.5 feet [328.42m].

October 11, 1882, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.020	Temperature: 3.4° [−15.9° C.]. Springfield army rifle. Fire directly towards observer. Sound, fairly sharp. Barometer, 29.560 [750.81mm]. Weather: Cloudy. Firing station due S. Wind: Firing station, very light, easterly, hardly perceptible; observing station, very light SSE., about 1 mile per hour [0.4m per second].
2	3.828	
3	3.913	
4	4.110	
5	4.164	
6	4.066	
7	4.074	
8	4.272	
9	4.098	
10	3.848	
Mean	4.0393	
Chron. corr	−.0109	
Corr. mean	4.0284	Mean velocity 1,042 feet [317.59m] per second.

May 16, 1883.

Number.	Elapsed time.	Conditions, &c.
1	3.924	Distance: 4,197 feet [1,279.22m]. Report dull. Colt's army revolver. Fired at right angles. Temperature: 17.6° [−8.0° C.]. Barometer: 29.892 [759.24mm]. Detached clouds. Wind: At observing station, NW. 4 miles per hour [1.8m per second], variable; at firing station, calm. Firing station due S. of observer.
2	3.899	
3	3.889	
4	3.903	
5	3.852	
6	3.941	
7	3.906	
8	3.936	
9	3.896	
10	3.885	
11	3.976	
12	3.852	
13	4.000	
14	3.860	
15	3.945	
16	3.889	
17	3.952	
18	3.802	
19	(*)	
20	3.815	
21	3.910	
22	3.895	* Record poor.
23	3.905	† Flash missed.
24	3.917	
25	4.000	
26	(*)	
27	4.005	
28	3.977	
29	3.906	
30	3.832	
31	3.830	
32	3.954	
33	3.842	
34	3.940	
35	3.878	
36	3.864	
37	3.960	
38	3.878	
39	(*)	
40	(†)	
Mean (36 shots)	3.9046	
Chron. corr	−.0109	
Corr. mean	3.8937	Mean velocity per second, 1,077.89 feet [328.53m].

November 3, 1882, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
1	4.259	Distance: 4,197 feet [1,279.22m]. Springfield rifle, ordinary cartridge. Ten shots, two of which the chronograph failed to record, owing to key. One shot was late at flash, and so rejected record. Flash toward station. Weather: Cloudy. Wind: Calm at station; barely perceptible air from the S. at Proteus Point. Temperature: −13.2° [−25.1° C.]. Sound, fairly sharp. The record, however, as a whole is poor, and this is retained only for use in case no other shots are fired at this temperature. * Flash recorded late; omitted in means.
2	4.115	
3	4.070	
4	3.900*	
5	4.113	
6	4.391	
7	4.204	
8	4.011	
Mean	4.1661	
Chron. corr	−.0109	
Corr. mean	4.1552	Mean velocity per second, 1,010.1 feet [307.87m].

October 12, 1882, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
1	3.871	Distance: 4,197 feet [1,279.22m]. Springfield rifle, fired directly toward the station. Weather: Clear, calm at each point. Reports of gun heard with *great clearness* or *sharpness*. Temperature: −7.6° [−22.0° C.]. Barometer: 29.598 [751.77mm].
2	3.973	
3	3.843	
4	3.938	
5	3.920	
6	3.973	
7	4.038	
8	3.880	
9	3.960	
10	3.990	
Mean	3.9386	
Chron. corr	−.0109	
Corr. mean	3.9277	Mean velocity per second, 1,068.6 feet [325.70m].

Experiments on the velocity of sound—Continued.

October 17, 1882, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.107	Ten shots from Springfield rifle,
2	4.021	fired toward the station.
3	4.119	Firing station due S. of observer.
4	4.036	Wind: At Fort Conger, light SE.
5	3.974	air, about 1 mile per hour [.4m
6	(*)	per second]; at Proteus Point,
7	4.352	light NW. air, about 1 mile per
8	4.041	hour [.4m per second].
9	3.891	Weather: Clear.
10	3.822	Sound dead, but distinct.
		Temperature: —14.9° [—26.1° C.]
Mean	4.0403	* Flash missed.
Chron. corr	—.0109	
Corr. mean	4.0294	Mean velocity per second, 1,041.6 feet [317.47m].

October 26, 1882, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.011	Distance: 4,197 feet [1,279.22m].
2	4.105	Springfield rifle, ordinary cartridge.
3	4.131	Barometer: 30.263 [768.67mm].
4	3.931	Temperature: —13.6° [—25.3° C.].
5	4.066	Wind: Calm at both stations.
6	3.778*	Weather: Detached clouds.
7	4.151	Sound of report distinct, but not very
8	4.192	sharp.
9	3.893	* Delay in breaking current; omitted
10	4.208	from mean.
Mean	4.0764	
Chron. corr	—.0109	
Corr. mean	4.0655	Mean velocity per second, 1,032.3 feet [314.63m].

November 2, 1882, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
1	4.087	Temperature: —18° [—27.8° C.]
2	(*)	Distance: 4,197 feet [1,279.22m].
3	(*)	Wind: Calm at both stations.
4	4.103	Weather: Clear.
5	4.156	Springfield rifle, ordinary cartridge.
6	(*)	Flash toward station.
7	4.219	* Snow interfered with action of
8	4.180	chronograph key by which five
9	(*)	records were imperfect. The en-
10	(*)	tire record not satisfactory owing to key.
Mean	4.1450	
Chron. corr	—.0109	
Corr. mean	4.1341	Mean velocity per second, 1,015 feet [309.36m].

October 10, 1882, 5.30 p. m.

Number.	Elapsed time.	Conditions, &c.
1	3.920	Temperature: +1.5° [—16.9° C.].
2	4.116	Distance: 4,197 feet [1,279.22m].
3	3.938	Weather: Light snow.
4	3.917	Wind: Fort Conger, very light east-
5	3.912	erly air, about 1 mile an hour [0.4m
6	3.886	per second]; Proteus Point, very
7	4.013	light northeasterly air, scarcely
8	3.930	perceptible.
		Gun discharged at right angles to
Mean	3.954	line of sound.
Chron. corr	—.011	
Corr. mean	3.943	Mean velocity per second, 1,064.4 feet [324.44m]. Omitting No. 2, mean 3.920 seconds, 1,070.7 feet [326.34m] per second.

November 11, 1882, 5.15 p. m.

Number.	Elapsed time.	Conditions, &c.
1	4.185	Distance: 4,197 feet [1,279.22m].
2	(*)	Springfield rifle, ordinary cartridge.
3	3.973	
4	4.135	Calm at each station.
5	4.120	Clear.
6	4.187	Report fairly sharp.
7	4.178	Barometer, 29.794 [756.75 mm].
8	4.262	Temperature: — 34.1° [—36.7° C.].
9	4.085	
10	4.077	
Mean	4.1336	
Chron. corr	—.0109	* Missed flash
Corr. mean	4.1227	Mean velocity, per second, 1018.02 feet [310.28m].

November 12, 1882, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
1	4.200	Distance: 4,197 feet [1,279.22m].
2	4.026	Springfield rifle, at right angles.
3	4.066	Report dull.
4	(*)	Clear. At Fort Conger anemometer
5	4.080	cups not moving, but smoke was
6	4.179	moving very slowly from NNW.
7	4.082	At Proteus Point, almost imper-
8	4.240	ceptible air from N.
9	4.282	Barometer: 29.444 [747.86mm].
10	4.316	Temperature: —31.8° [—35.4° C.].
Mean	4.1634	
Chron. corr	—.0109	* Imp. record.
Corr. mean	4.1525	Mean velocity, per second, 1,010.71 feet [308.06m].

Experiments on the velocity of sound—Continued.

NOVEMBER 18, 1882, 5 P. M.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.055	Distance: 4,197 feet [1,279.22m]. Springfield rifle, caliber 45, ordinary ball cartridge; at right angles. Clear, calm. Barometer: 29.805 [757.04mm]. Temperature: —32.6 [—35.9° C.].
2	4.288	
3	4.133	
4	4.058	
5	4.078	
6	4.115	
7	4.226	
8	4.138	
9	4.222	
10	3.987	
Mean	4.1300	
Chron. corr.	—.0109	
Corr. mean	4,1191	Mean velocity per second, 1,018.91 feet [410.56m].

NOVEMBER 20, 1882, 5 P. M.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.161	Distance: 4,197 feet [1,279.22m]. Clear. Anemometer cups barely moving—NE. air. At Proteus Point, calm. Sound, dull. Springfield rifle and ordinary ball cartridge used. Barometer: 36.052 [763.31mm]. Temperature: —25.6° [—32.0° C.].
2	4.233	
3	4.183	
4	4.080	
5	(*)	
6	4.259	
7	4.195	
8	4.161	
9	4.095	
10	(†)	
Mean	4.1709	* Missed flash.
Chron. corr.	—.0109	† Record deficient.
Corr. mean	4.1600	Mean velocity per second, 1,008.89 feet [307.50m].

NOVEMBER 22, 1882, 8 A. M.

Number.	Elapsed time.	Conditions, &c.
Rifle.	*Seconds.*	
1	4.216	Distance: 4,197 feet [1,279.22m]. Clear, calm at both stations. Report sharp. Temperature: —32.6° [—35.9° C.]. Barometer: 30.335 [770.50mm].
2	4.239	
3	4.235	
4	4.301	
5	4.016	
6	3.932	
7	(*)	* Flash signal late.
8	4.256	
9	4.245	
10	3.998	
Mean (9 shots)	4.1598	
Chron. corr.	—.0109	
Corr. mean	4.1489	Mean velocity per second, 1,0[illegible]9 feet [308.32m].
Revolver.		
1	4.166	
2	(*)	
3	4.106	* Incomplete record, shots fired too rapidly.
4	4.211	
5	4.179	
6	4.194	
7	4.216	
8	3.969	
9	4.173	
10	4.107	
11	(*)	
12	3.961	
13	(*)	
14	(*)	
15	3.995	
16	4.081	
17	4.063	
18	4.148	
19	4.061	
20	4.198	
21	(*)	
22	(*)	
23	4.165	
24	(*)	
Mean (17 shots)	4.1172	
Chron. corr.	—.0109	
Corr. mean	4.1063	Mean velocity per second, 1,022.09 feet [311.53m].

NOVEMBER 22, 1882, 5 P. M.

Number.	Elapsed time.	Conditions, &c.
Rifle.	*Seconds.*	
13	4.006	Distance: 4,297 feet [1,279.22m]. Clear, barely perceptible NE. air. Anemometer cups not stirring. At Proteus Point, calm. Temperature: —32.6° [—35.9° C.]. Barometer: 30.349 [770.85mm].
14	4.178	
15	4.140	
16	4.128	
17	4.086	
18	4.120	
19	4.056	
20	4.104	
21	4.045	
22	4.158	
Mean (10 shots)	4.1021	
Chron. corr.	—.0109	
Corr. mean	4.0912	Mean velocity per second, 1,025.86 feet [312.68m].
Revolver.		
1	4.215	
2	4.400*	Distance: 4,197 feet [1,279.22m]. Ordinary cartridges fired from regulation Springfield rifle and Colt's army revolver. In A. M., 12 rifle followed by 24 revolver shots; but in P. M., the 12 rifle shots were fired between the 12th and 13th *pistol* shot; the 13th shot receiving No. 23, &c. But very slight difference in loudness of pistol and rifle reports. Rifle slightly the loudest. Flash of revolver, however, much more distinct.
3	4.165	
4	4.180	
5	4.002	
6	4.174	
7	4.214	
8	4.165	
9	4.067	
10	(†)	
11	4.123	
12	4.173	
23	4.161	
24	4.162	
25	4.220	
26	4.027	
27	4.138	* Thrown out.
28	4.099	† Imperfect record.
29	4.121	
30	4.103	
31	4.140	
32	4.086	
33	4.144	
34	4.156	
Mean (22 shots)	4.1380	
Chron. corr.	—.0109	
Corr. mean	4.1271	Mean velocity per second, 1,016.94 feet [309.96m].

Experiments on the velocity of sound—Continued.

NOVEMBER 21, 1882, 5 P. M.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.056	Distance: 4,197 feet [1,279.22$^{\mathrm{m}}$].
2	4.250	Springfield rifle, ordinary ball cartridge used.
3	4.202	
4	4.079	Clear, calm. Sound, dull.
5	4.212	Proteus Point, calm.
6	4.159	
7	4.218	
8	4.034	
9	4.162	
10	4.092	
Mean	4.1464	Barometer: 30.205 [767.20$^{\mathrm{mm}}$].
Chron. corr.	—.0109	Temperature: —30.4° [—34.7° C.].
Corr. mean	4.1355	Mean velocity per second, 1,014.87 feet [309.33$^{\mathrm{m}}$].

DECEMBER 2, 1882, 5 P. M.

Number.	Elapsed time.	Conditions, &c.
Rifle.	*Seconds.*	
1	4.164	Distance: 4,197 feet [1,279.22$^{\mathrm{m}}$].
3	4.195	Key worked badly and only part of the 36 shots could be read.
4	4.163	Calm and clear.
5	4.046	Barometer: 29.954 [760.82$^{\mathrm{mm}}$].
Revolver.		Temperature: —40.1° [—40.1° C.].
6	4.118	
7	4.152	
8	4.180	
9	4.196	
10	4.155	
11	4.185	
12	4.231	
13	4.206	
14	4.028	
15	4.341	
Mean (14 shots)	4.1686	
Chron. corr.	—.0109	
Corr. mean	4.1577	Mean velocity per second, 1,009.89 feet [307.808$^{\mathrm{m}}$].

DECEMBER 20, 1882, 5.10 P. M.

Number.	Elapsed time.	Conditions, &c.
1	4.309	Distance: 4,197 feet [1,279.22$^{\mathrm{m}}$].
2	4.254	Light snow.
3	3.992	Calm at each station.
4	4.160	Colt's army revolver, cal. 45, used.
5	4.036	Report dull. Forty-two shots fired, 3 missed and 2 were late.
6	4.094	
7	4.098	Barometer: 29.943 [760.54$^{\mathrm{mm}}$].
8	4.149	Temperature: —19.5° [—28.6° C.].
9	4.175	
10	3.935	
11	4.098	
12	4.197	
13	(*)	* Flash signal late.
14	4.127	
15	4.050	
16	4.114	
17	4.057	
18	4.040	
19	4.118	
20	3.943	
21	4.099	
22	4.043	
23	4.013	
24	4.107	
25	4.047	
26	3.937	
27	3.943	
28	4.055	
29	4.045	
30	4.006	
31	3.964	
32	(*)	
33	4.071	
34	3.950	
35	3.919	
36	4.085	
37	4.077	
38	4.009	
39	4.043	
Mean (37 shots)	4.0638	
Chron. corr.	—.0109	
Corr. mean	4.0529	Mean velocity per second, 1,035.55 feet [315.628$^{\mathrm{m}}$].

DECEMBER 26, 1882, 5.15 P. M.

Number.	Elapsed time.	Conditions, &c.
1	4.110	Distance: 4,197 feet [1,279.22$^{\mathrm{m}}$].
2	4.096	Weather: Clear.
3	4.118	Wind: About 1 mile per hour [.4$^{\mathrm{m}}$ per second] E. at station. Calm at Proteus Point.
4	4.280	
5	4.179	
6	4.144	Report dull.
7	3.998	Barometer: 30.247 [768.26$^{\mathrm{mm}}$].
8	4.111	Temperature: —19.9° [—28.8° C.].
9	4.000	
10	4.177	
11	4.124	
12	4.154	
13	3.998	
14	4.000	
15	(*)	* Imperfect record.
16	4.123	
17	4.185	
18	4.031	
19	3.996	
20	4.024	
21	4.004	
22	4.098	
23	3.975	
24	(*)	
25	3.985	
26	4.055	
27	4.055	
28	3.929	
29	(*)	
30	3.974	
31	4.110	
32	(*)	
33	(*)	
34	4.088	
35	4.081	
36	3.992	
37	4.070	
38	4.139	
39	4.056	
40	(†)	† Missed flash.
Mean (34 shots)	4.0715	
Chron. corr.	—.0109	
Corr. mean	4.0606	Mean velocity per second, 1,033.59 feet [315.031$^{\mathrm{m}}$].

Experiments on the velocity of sound—Continued.

November 29, 1882, 6 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.156	Revolver 36 shots; at right angles.
2	4.074	Distance: 4,197 feet [1,279.22^{m}].
3	4.186	Clear, calm.
4	4.127	Barometer: 30.182 [766.61^{mm}].
5	4.191	Temperature: —44.3° [—42.4° C.].
6	4.253	
7	4.188	
8	4.187	
9 to 24	(*)	* Flashes too dim owing to breath before observer.
25	4.112	
26	4.178	
27	4.122	
28	4.203	
39	4.144	
30	4.266	
31	(†)	† Flash-signal late.
32	4.107	
33	4.313	
34	4.099	
35	4.140	
Mean (18 shots)	4.1714	
Chron. corr.	—.0109	
Corr. mean	4.1605	Mean velocity per second, 1,008.80 feet [307.48^{m}].

January 4, 1883, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
1	4.266	Distance: 4,197 feet [1,279.22^{m}].
2	4.232	Weather: Clear and calm at both stations.
3	4.273	
4	4.325	Sound: Fairly sharp.
5	4.291	Colt's army revolver, with standard ammunition, used.
6	4.141	
7	4.231	Temperature: —39.2° [—39.6° C.].
8	4.086	Barometer: 29.729 [755.10^{mm}].
9	4.193	Forty shots were fired, but the record on chronograph was very bad, so only the following twenty could be read and reduced.
10	4.128	
11	4.147	
12	4.246	
13	4.152	
14	4.152	
15	4.126	
16	4.149	
17	4.286	
18	4.178	
19	4.193	
20	4.060	
Mean	4.19275	
Chron. corr	—.01090	
Corr. mean	4.1828	Mean velocity per second, 1,003.39 feet [305.826^{m}].

February 3, 1883, 5.05 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.434	Distance: 4,197 feet [1,279.22^{m}].
2	4.464	Calm and clear.
3	4.210	Sound, fairly sharp.
4	4.261	Colt's revolver.
5	4.369	Temperature: —51.6° [—46.4° C.].
6	4.287	
7	4.150	
9	4.193	
11	4.274	
12	4.324	
13	4.060	
14	4.126	
15	4.105	
16	4.158	
Mean (14 shots)	4.2439	
Chron. corr	—.0109	
Corr. mean	4.2330	Mean velocity per second, 991.50 feet [302.203^{m}].
1	4.271	
2	4.183	Distance: 4,197 feet [1,279.22^{m}].
3	4.280	Calm and clear.
4	4.079	Sound, fairly sharp.
5	4.310	Colt's revolver.
9	4.135	Temperature: —51.6° [—46.4° C.].
10	4.152	Two sets of 41 shots each fired. Unsatisfactory record for many shots, owing first time to trouble with key breaking current, and after by ink freezing on paper or chronograph.
12	4.242	
14	4.198	
15	4.101	
16	4.200	
17	4.188	
21	4.220	
22	4.218	
23	4.184	
25	4.226	
28	4.288	
30	4.233	
31	4.263	
32	4.094	
33	4.175	
34	4.125	
35	4.105	
36	4.162	
37	4.362	
38	4.204	
39	4.148	
40	4.117	
41	4.235	
Mean (29 shots)	4.1965	
Chron. corr	—.0109	
Corr. mean	4.1856	Mean velocity per second, 1,002.72 feet [305.622^{m}].
Mean (43 shots)	4.2119	
Chron. corr	—.0109	
Corr. mean	4.2010	Grand mean velocity per second, 999 feet [304.489^{m}].

Experiments on the velocity of sound—Continued.

JANUARY 19, 1883, 5.10 P. M.

Column 1.		Column 2.		Conditions, &c.
Number.	Elapsed time.	Number.	Elapsed time.	
	Seconds.		*Seconds.*	
1	4.595	2	4.363	Distance: 4,197 feet [1,279.22^{m}].
3	4.563	4	4.411	Clear and calm at both stations.
5	4.373	6	4.663	Report dull.
7	4.254	8	4.425	Temperature: —43.1° [—41.7° C.].
9	(*)			Sergeant Brainard fired revolver in front of my face. At flash, the circuit was broken. Private Long, at Proteus Point, on seeing flash put his finger on trigger and fired as soon as he heard the report. At his flash the circuit was again broken, and the time elapsed is given in column 1. As soon as report of Long's pistol was heard the circuit was again broken, and the time is given in column 2.
11	4.466	12	4.244	
13	4.440	14	4.250	
15	4.618	16	4.331	
17	4.655	18	4.346	
19	(†)	20	(‡)	
21		22	(‡)	
23	4.722	24	4.371	From 50 experiments it was found that Private Long's firing from a given sound took .226 second's time.
25	4.531	26	4.216	
27	4.515	28	4.209	
29	4.468	30	4.277	* Late at Fort Conger.
31	4.542	32	4.258	† Late in flash.
33	4.495	34	4.234	‡ Flash missed at Proteus Point.
35	4.500	36	4.220	
37	4.578	38	4.130	
39	4.656	40	4.241	
41	4.637	42	4.263	
Mean (18 shots)	4.5338 —.226		4.3029	
	4.3078			
Chron. corr	—.0109		—.0109	
Corrected mean	4.2969	Corr. mean	4.2920	Mean velocity per second, 976.75 feet [297.707^{m}], column 1; 977.87 feet [298.049^{m}] per second, column 2.

Experiments on the velocity of sound—Continued.

January 14, 1883, 5 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.171	Distance: 4,197 feet [1,279.22^m].
2	4.189	Colt's army revolver, army cartridge.
3	4.110	
4	4.217	Barometer: 29.766 [756.04^{mm}].
6	4.083	Temperature: —40° [—40° C.].
7	4.221	Report sharp and very distinct.
8	4.024	Clear, occasionally puffs of lightest air from the E. (across line), at Fort Conger, during firing.
9	4.096	
10	4.204	
12	4.114	At Proteus Point calm, candle burning in open air undisturbed.
13	4.160	
14	4.056	
16	4.004	Nos. 5, 11, and 22, imperfect record.
17	4.137	Nos. 15, 23, and 24, flash-signal late.
18	4.143	
19	4.085	
20	4.176	
21	4.010	
24	4.073	
25	4.098	
26	4.131	
27	4.083	
28	4.013	
29	4.073	
30	4.090	
31	4.110	
32	4.101	
33	4.006	
35	4.031	
36	4.112	
37	4.100	
38	4.144	
39	4.120	
40	4.185	
Mean	4.10794	
Chron. corr	—.01090	
Corr. mean	4.097	Mean velocity per second, 1,024.4 feet [312.23^m].

January 16, 1883.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.256	Distance: 4,197 feet [1,279.22^m].
2	4.191	At beginning, barely perceptible air from SE.
3	4.228	
4	4.288	11th to 22d shots, about 1 mile per hour [0.4^m per second] which died away so that from 34th shot smoke rose perpendicularly.
5	4.143	
6	4.215	
7	4.207	
8	4.281	Sound at first dull, but became gradually sharper.
9	4.282	
10	4.169	Clouds about 4.
11	4.307	Temperature: —46.1° [—43.4° C.].
12	4.384	
13	(*)	* Missed.
14	4.369	
15	4.192	
16	4.274	
17	4.186	
18	4.120	
19	4.444	
20	4.223	
21	4.177	
22	4.126	
23	4.307	
24	4.160	
25	4.292	
26	4.274	
27	(†)	† Sound signal late.
28	4.214	
29	4.147	
30	4.178	
31	4.007	
32	4.246	
33	4.356	
34	4.197	
35	4.266	
36	4.385	
37	4.173	
38	4.195	
39	4.210	
40	4.156	
41	(‡)	‡ Missed flash.
Mean (38 shots)	4.2322	
Chron. corr	—.0109	
Corr. mean	4.2213	Mean velocity per second, 994.24 feet [303.038^m].

Experiments on the velocity of sound—Continued.

February 27, 1883, 7.45 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.072	Distance: 4,197 feet [1,279.22^{m}].
2	4.251	Weapon: Colt's army revolver.
3	4.311	Weather: Calm and clear at each station.
4	4.166	
5	4.284	Sound very sharp and distinct.
6	4.234	Temperature: −52.1° [−46.7° C].
7	(*)	*Flash signal late.
8	4.127	
9	4.049	
10	4.058	
11	4.121	
12	4.165	
13	4.235	
14	4.098	
15	4.214	
16	4.240	
17	4.116	
18	(†)	†Record imperfect.
19	4.063	
20	4.102	
21	4.070	
22	4.106	
23	4.145	
24	4.240	
25	4.114	
26	4.074	
27	4.063	
28	4.137	
29	4.169	
30	4.098	
31	4.044	
32	4.100	
33	4.095	
34	4.074	
35	4.123	
36	4.184	
37	4.124	
38	4.087	
39	4.161	
40	4.145	
41	4.206	
42	4.066	
43	4.051	
44	4.090	
42 shots	5.672	
Mean	4.1350	
Chron. corr	−.0109	
Corr. mean	4.1241	Mean velocity per second, 1,017.68 feet [310,182^{m}]

February 28, 1883, 5.20 p. m.

Number.	Elapsed time.	Conditions, &c.
	Seconds.	
1	4.305	Distance: 4,197 feet [1,279.22^{m}].
2	4.254	Weapon: Colt's army revolver and ammunition.
3	4.252	
4	4.144	Weather: Calm.
5	4.233	Temperature: −54.1° [−47.8° C.].
6	4.128	
7	4.173	
8	4.230	
9	4.128	
10	4.240	
11	4.198	
12	4.241	
13	4.276	
14	4.128	
15	4.181	
16	4.170	
17	4.115	
18	4.214	
19	4.166	
20	4.163	
21	4.220	
22	4.259	
23	4.140	
24	4.228	
25	4.154	
26	4.314	
27	4.154	
28	4.381	
29	4.188	
30	4.165	
31	4.168	
32	4.182	
33	4.201	
34	4.081	
35	4.100	
36	4.130	
37	4.144	
38	4.216	
39	4.233	
40	4.206	
41	4.196	
42	4.125	
43	4.136	
44	(*)	*Record imperfect.
45	4.159	
46	4.142	
47	4.154	
Mean of 46 shots	4.1871	
Chron. corr	−.0109	
Corr. mean	4.1762	Mean velocity per second, 1,004.98 feet [306.311^{m}].

Results of sound experiments at Fort Conger, Grinnell Land.

Date.	No. of shots.	Mean velocity, feet, per second.	Mean velocity, meters, per second.	Distance in feet.	Distance in meters.	Temperature. Fahr.	Temperature. Cent.	Remarks.
1882.								
Oct. 10	7	1,070.7	326.34	4,197.0	1,279.22	1.5	—16.9	Snow and light wind.
12	10	1,068.6	325.70	4,197.0	1,279.22	— 7.6	—22.0	Calm and clear.
17	9	1,041.6	317.47	4,197.0	1,279.22	—14.9	—26.1	Clear, light wind.
26	9	1,032.3	314.63	4,197.0	1,279.22	—13.6	—25.3	Calm, detached clouds.
Nov. 2	5	1,015.0	309.36	4,197.0	1,279.22	—18.0	—27.8	Snow interfered with action of chronograph key by which five records were imperfect. The entire record not satisfactory owing to key.
3	7	1,010.1	307.87	4,197.0	1,279.22	—13.2	—25.1	Sound fairly sharp. The record, however, as a whole, is poor, and this is retained only for use in case no shots are fired at this temperature.
11	9	1,018.02	310.28	4,197.0	1,279.22	—34.1	—36.7	Calm and clear.
12	9	1,010.71	308.06	4,197.0	1,279.22	—31.8	—35.4	Clear, very light wind, northerly.
18	10	1,018.91	310.56	4,197.0	1,279.22	—32.6	—35.9	Clear and calm.
20	8	1,008.89	307.50	4,197.0	1,279.22	—25.6	—32.0	Clear, very light N. E. wind.
21	10	1,014.87	309.33	4,197.0	1,279.22	—30.4	—34.7	Clear and calm.
22	9	1,011.59	308.32	4,197.0	1,279.22	—32.6	—35.9	Clear and calm, a. m.
22	*17	1,022.09	311.53	4,197.0	1,279.22	—32.6	—35.9	Clear and calm, a. m.
22	10	1,025.86	312.68	4,197.0	1,279.22	—32.6	—35.9	Clear, very light N. E. wind, p. m.
22	*22	1,016.94	309.96	4,197.0	1,279.22	—32.6	—35.9	Clear and calm, p. m.
29	*18	1,008.80	307.48	4,197.0	1,279.22	—44.3	—42.4	Clear and calm.
Dec. 2	†14	1,009.89	307.81	4,197.0	1,279.22	—40.1	—40.1	Clear and calm.
20	*37	1,035.55	315.63	4,197.0	1,279.22	—19.5	—28.6	Calm, light snow.
26	*34	1,033.59	315.03	4,197.0	1,279.22	—19.9	—28.8	Clear, wind 1 mile E. at station, calm at Proteus Point.
1883.								
Jan. 4	*20	1,003.39	305.83	4,197.0	1,279.22	—39.2	—39.6	Clear and calm.
14	*34	1,024.4	312.23	4,197.0	1,279.22	—40.0	—40.0	Clear, calm at Proteus Point, light E. wind at station.
16	*38	994.24	303.04	4,197.0	1,279.22	—46.[illegible]	—43.4	Light S. wind, barely perceptible; clouds about 4.
1[illegible]	*18	976.75	297.71	4,197.0	1,279.22	—43.1	—41.7	Clear and calm.
	*18	977.87	298.05					
	*14	991.50	302.20	4,197.0	1,279.22	—51.6	—46.4	Clear and calm.
Feb. 3	*29	1,002.72	305.62	4,197.0	1,279.22	—51.6	—46.4	Clear and calm.
	*43	999.00	304.49	4,197.0	1,279.22	—51.6	—46.4	
27	*42	1,017.68	310.18	4,197.0	1,279.22	—52.1	—46.7	Clear and calm.
28	46	1,004.98	306.31	4,197.0	1,279.22	—54.1	—47.8	Calm.

* Colt's army revolver. † Ten rifle; four revolver.

METEOROLOGICAL OBSERVATIONS

APPENDIX No. 138.

The meteorological observations of the Lady Franklin Bay Expedition were almost entirely made by Sergeants W. S. Jewell, H. S. Gardiner, and D. C. Ralston of the Signal Corps U. S. Army. These sergeants in successive order performed tours of duty covering eight hours each. To alternate the hours a tour of duty was taken each Sunday by Sergeant Edward Israel, Signal Corps, the astronomer of the expedition.

These observers by their skill, zeal, and attention performed their arduous work in such a manner as to be deserving of the highest praise.

On *term-days* and other special occasions the meteorological observations were necessarily entrusted to various other members of the expedition, who showed the same zeal and attention as did the more practiced observers.

The observations at Fort Conger have been divided under the following heads:

Atmospheric pressure.
Temperature of the air.
Vapor tension and relative humidity.
Wind.
Clouds, precipitation, and evaporation.
Solar and terrestrial radiation.
Temperature of the earth.
Temperature of the sea and ice measurements.
Aurora.
Miscellaneous observations comprising those made.
  (1) From St. John's, Newfoundland, to Lady Franklin Bay.
  (2) During boat and sledge journey from Fort Conger to Camp Clay.
  (3) At Camp Clay.
  (4) Comparative wind observations at Dutch Island and Fort Conger.
  (5) Field meteorological observations, 1881-1883.

Index of meteorological charts and maps.

Index of meteorological tables.

Index of meteorological tables—Continued.

ATMOSPHERIC PRESSURE.

The barometric observations of the Lady Franklin Bay Expedition commenced on July 7, 1881, the date of the departure from St. John's, Newfoundland, and were continued until the breakage of the last mercurial barometer at Camp Clay on May 23, 1884.

The observations on the outward voyage, the last of which was at 12 p. m. (Washington Mean Time) August 17, 1881, were made every four hours from a mercurial marine barometer (Green, New York), No. 2418, which was 3 feet [0.91^{m}] above the sea-level.

The readings here published, after having been corrected for temperature, were reduced to the sea-level by the constant + .003 inch [$+0.08^{mm}$]. Compensated aneroid No. 2651 was also read hourly from August 8, its correction being determined daily from the readings of the marine barometer.

From 1 a. m., August 18, 1881, when observations commenced *on shore* at Fort Conger (81° 44′ N. 64° 45′ W.) to include December 31, 1881, the compensated aneroid No. 2651 was read hourly and its readings reduced to 32° (0° C.) *and the sea*, by a correction determined *daily* with reference to the four hourly readings of U. S. Signal Service mercurial barometer No. 229.

Barometer No. 229 was read every four hours at 3, 7, and 11 a. m. and p. m., Washington mean time, from August 18 until December 15, 1881, subsequent to which date it was read hourly until August 9, 1883. This barometer (No. 229) from 1 a. m. August 19 until 7 p. m. (inclusive) September 12, 1881, was situated 31.7 feet [9.66^{m}] above the sea, and its readings were corrected for elevation by a constant of + .036 inch [$+0.91^{mm}$].

Subsequent to 7 p. m., September 12, 1881, until the abandonment of Fort Conger, August 9, 1883 it was 24.2 feet [7.35^{m}] above mean sea-level, for which a constant correction of + .030 inch [$+0.76^{mm}$] has *in all cases* been applied.

From August 9 (2 p. m.) 1883, until October 26 (inclusive), 1883, the readings are from compensated aneroid barometer Nos. 2651 and 11, and have been corrected for elevation and instrumental error. It was necessarily assumed that the error of No. 2651, an excellent instrument, remained constant from August 9 until its loss during a violent gale September 27, 1883, and that the latest determined error of No. 11 also remained constant.

From October 27, 1883, until it was broken May 23, 1884, the readings are from mercurial barometer No. 522. This instrument, abandoned by First Lieut. E. A. Garlington, U. S. Army, at Cape Sabine, was found in perfect condition. Its readings as here given are reduced for temperature, and afterwards to the sea by a constant of + .010 inch [$+0.25^{mm}$].

Its elevation 2 feet [$.61^{m}$] above extreme high water was estimated to be 10 feet [3.05^{m}] above mean sea-level.

Every precaution was taken to insure the utmost accuracy in the observations at Fort Conger. Barometer No. 229 was compared daily subsequent to January 1, 1882,* with mercurial standard barometer No. 319, which had been set aside as a standard. The difference between these barometers rarely varied from ± .003 inch [$\pm 0.08^{mm}$] and remained substantially unchanged during the two years observations at Conger.

No. 229 was confined in its wooden box, except when being read, and was so distant and protected from the influence of the heating stove that its temperature readings fluctuated within a comparatively limited range. During the first year it was distant at least 30 feet [9^{m}] from the heating-stove with intervening bunks, &c., which absolutely prevented any direct radiation from the stove to the instrument. The second year the heating-stove was within 10 or 12 feet [about 3 to 4^{m}] of the barometer which suspended in the observer's room was completely protected from direct heat by a solid wooden partition from floor to ceiling, and satisfactorily from radiated heat.

The accuracy of all readings was determined by checking them with the record of a registering aneroid which was in good working order the greater part of the time, although its range was never as great as that of the non-recording instrument.

*Prior to that date comparative readings were made each month, of which the following were preserved in my diary: September 14, 1881, from five readings error of No. 229 as to No. 319 − .004 inch [-0.10^{mm}]; October 31, five readings, − .001 inch [-0.03^{mm}]; December 1, five readings, − .002 inch [-0.05^{mm}]. The book of daily comparative readings was left at Fort Conger as heavy and unessential.—A. W. G.

Fully nine-tenths of the observations were made by old and trained observers of the Signal Service, but to discover or obviate erroneous readings, to which every observer is liable, it was ordered that the instrument after each reading be slid back carefully into its case with the vernier unchanged, and that the observer of the following hour should first read again the vernier and check the record of his immediate predecessor.

As one or two sudden and inexplicable changes were recorded in September and October, 1881, the observer was later required to personally and immediately report to me, either day or night, any change of .030 inch [0.76^{mm}] in an hour. As a result no rapid fluctuations were ever after recorded which were not in consonance with other meteorological conditions, and for many of the months no hourly change as great as .050 inch [1.27^{mm}] was noted.

Interpolated values are printed in italics.

Maxima and minima values are printed in bold-faced type.

AUGUST, 1881.

TABLE I.—*Atmospheric pressure (reduced to sea)*,[a] *August*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea $\left\{ \begin{matrix} 3.0^c \\ 31.7 \end{matrix} \right\}$ feet $= \left\{ \begin{matrix} .91 \\ 9.66 \end{matrix} \right\}$ meters.

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	------	------	------	------	------	------	------	------	------	------	------	------	------	------
2	------	------	------	------	------	------	------	------	------	------	------	------	------	------
3	------	------	------	------	------	------	------	------	------	------	------	------	------	------
4	------	------	------	------	------	------	------	------	------	------	------	------	------	------
5	------	------	------	------	------	------	------	------	------	------	------	------	------	------
6	------	------	------	------	------	------	------	------	------	------	------	------	------	------
7	------	------	------	------	------	------	------	------	------	------	------	------	------	------
8	.556	.536	.556	.536	.556	.536	.516	*.510*	.506	.476	.496	.476	.476	.476
9	.410	.410	.410	.410	.410	.410	.430	.420	.420	.400	.400	.400	.420	.420
10	.472	.490	.512	.512	.522	.542	.562	.562	.582	.582	.592	.602	.612	.632
11	.726	.736	.756	.756	.766	.786	.786	.776	.756	.766	.766	.756	.726	.726
12	.799	.819	.829	.849	.859	.859	.859	.859	.879	.879	.879	.879	.889	.899
13	.970	.970	.980	.990	.990	.980	.970	.950	.950	.930	.920	.910	.910	.900
14	.815	.805	.805	.805	.805	.805	.805	.825	[d].818	.805	.805	.805	.795	.795
15	.831	.851	[d].848[e]	[f]*.860*	.911	.871	.871	.891	.891	.881	.871	.871	.871	.881
16	.955	.965	.965	.965	.965	.965	.965	.965	*.970*	*.970*	.975	.985	.965	.995
17	.985	.985	.985	.985	.985	.985	1.005	1.005	.985	1.015	1.015	1.015	1.015	1.015
18	1.044	1.044	1.044	1.044	1.024	1.024	1.024	1.024	1.024	1.024	.994	.974	.964	.964
19	.956	.916	.906	.906	.896	.906	.876	.876	.866	.866	.856	.846	.846	.846
20	.798	.798	.788	.808	.808	.808	.808	.808	.808	.808	.808	.798	.798	.798
21	.796	.796	.796	.786	.766	.766	.756	.756	.756	.746	.746	.736	.726	.726
22	.716	.716	.726	.736	.746	.756	.756	.766	.796	.796	.806	.816	.826	.826
23	.887	.897	.907	.907	.917	.917	[g].960	1.007	1.017	1.017	.957	.957	.957	.957
24	1.056	1.066	1.066	1.066	1.076	1.096	1.106	1.106	1.106	1.096	1.096	1.106	1.106	1.106
25	1.089	1.089	1.089	1.089	1.089	1.089	1.119	1.119	1.129	1.119	1.119	1.099	1.089	1.089
26	1.084	1.084	1.064	1.064	1.074	1.064	1.054	1.054	1.034	1.014	.994	.984	.954	.934
27	.783	.793	.803	.793	.793	.793	.783	.793	.813	.783	.783	.763	.763	.763
28	.728	.728	.758	.758	.758	.768	.788	.818	.808	.828	.828	.828	.838	.868
29	.863	.863	.883	.893	.903	.923	.943	.933	.953	.953	.963	.963	.993	.983
30	.945	.945	.945	.945	.945	.935	.935	.935	.945	.925	.925	.895	.895	.895
31	.749	.749	.749	.749	.749	.749	.749	.749	.749	.729	.729	.729	.729	.709
Means	.8339	.8355	.8404	.8422	.8464	.8472	.8511	.8544	**.8567**	.8503	.8468	.8414	.8401	.8418
Means in millimeters, 700 +	57.77	57.82	57.92	57.97	58.07	58.10	58.21	58.28	**58.36**	58.18	58.10	57.95	57.92	57.97

[a] By constant +.003 to include the 17th, and by one of +.036 subsequently.
[b] Aneroid barometer No. 2651 compensated.
[c] Three feet [.91m] to include the 17th; subsequently 31.7 feet [9.66m].
[d] Regular mercurial.
[e] Aneroid read .950, evidently .100 too high.
[f] Aneroid read .960, evidently .100 too high.
[g] Goldschmidt's aneroid.

AUGUST, 1881.

TABLE I.—*Atmospheric pressure (reduced to sea), August, 1881.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea, $\left\{ \begin{matrix} 3.0 \\ 31.7 \end{matrix} \right\}$ feet $= \left\{ \begin{matrix} .91 \\ 9.66 \end{matrix} \right\}$ meters.

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Correction for instrumental error used.	Daily means in *mm.*, 700+	Date.
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.456	.446	.436	.426	.426	.426	.429	.406	.396	.396	.4770	.556	**.396**	.160	— .047	48.70	8
.430	.450	.460	.460	.460	.470	.480	.490	.500	.500	**.4362**	.500	.400	.100	— .033	**47.66**	9
.662	.662	.672	.682	.672	.672	.672	.692	.702	.712	.6074	.712	.472	.240	— .061	52.01	10
.736	.756	.766	.786	.786	.786	.786	.776	.796	.796	.7648	.796	.726	.070	— .067	56.02	11
.919	.939	.939	.949	.959	.969	.969	.989	.969	.979	.9007	.989	.799	.190	— .064	59.48	12
.900	.900	.900	.880	.880	.880	.860	.850	.830	.830	.9179	.990	.830	.160	— .073	59.90	13
.815	.815	.815	.825	.825	.825	.805	.835	.855	.825	.8139	.855	.795	.060	— .078	57.26	14
.891	.901	.901	.901	.901	.911	.911	.911	.931	.941	.8875	.941	.831	.110	— .072	59.14	15
.975	.975	.975	.975	.975	.985	.975	.995	.975	.975	.9729	.995	.955	.040	— .078	61.30	16
1.015	1.015	1.015	1.015	1.015	1.025	1.025	1.035	1.035	1.035	1.0088	1.035	.985	.050	— .068	62.22	17
.944	.944	.944	.944	.924	.924	.924	.924	.924	.894	.9792	1.044	.894	.150	— .059	61.45	18
.826	.816	.806	.816	.806	.806	.806	.806	.806	.806	.8527	.956	.806	.150	— .010	58.26	19
.808	.808	.818	.808	.808	.808	.808	.808	.808	.798	.8051	.818	.788	.030	— .018	57.04	20
.726	.726	.726	.716	.716	.716	.716	.716	.696	.716	.7427	.796	.696	.100	— .030	55.46	21
.846	.846	.866	.886	.886	.886	.886	.886	.886	.886	.8143	.886	.716	.170	— .030	57.26	22
.957	.957	.957	.957	.957	.967	.967	.977	.997	1.017	.9571	1.017	.887	.130	— .049	60.90	23
1.116	1.126	1.116	1.116	1.116	1.116	1.106	1.106	1.106	1.106	**1.0993**	1.126	1.056	.070	— .010	**64.50**	24
1.089	1.089	1.089	1.099	1.079	1.099	1.089	1.089	1.089	1.089	1.0965	**1.129**	1.079	.050	—)27	64.42	25
.914	.864	.864	.824	.824	.804	.804	.774	.764	.774	.9443	1.084	.764	.320	— .022	60.56	26
.753	.753	.743	.743	.743	.753	.753	.753	.743	.743	.7701	.813	.743	.070	— .013	56.14	27
.838	.838	.838	.838	.858	.858	.868	.868	.858	.858	.8176	.868	.728	.140	— .028	57.36	28
.983	.993	.993	.993	.993	.983	.963	.953	.943	.943	.9480	.993	'63	.130	— .023	60.66	29
.855	.845	.835	.825	.805	.785	.775	.755	.765	.735	.8746	.945	735	.210	— .021	58.81	30
.709	.709	.689	.689	.679	.679	.659	.659	.659	.649	.7144	.749	.649	.100	— .007	54.72	31
.8401	.8405	.8401	.8397	.8372	.8389	.8347	.8355	.8347	**.8334**	.8418	.900	.775	.125	— .041	-------	
57.92	57.92	57.92	57.92	57.85	57.90	57.80	57.82	57 80	**57.75**	57.97	59.45	56.27	3.17	—1.05	57.97	

SEPTEMBER, 1881.

TABLE II.—*Atmospheric pressure* (*reduced to sea*)[a], *September*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea, 31.7[c] feet [9.66 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.649	.649	.629	.649	.649	.619	.619	.619	.619	.599	.599	.599	.599	.599
2	.625	.625	.625	.625	.625	.635	.655	.675	.695	.705	.735	.735	.755	.775
3	.947	.957	.957	.977	.987	1.007	1.007	1.027	1.047	1.047	1.047	1.047	1.047	1.057
4	1.140	1.160	1.160	1.180	1.190	1.190	1.210	1.220	1.230	1.240	1.250	1.250	1.250	1.240
5	1.076	1.076	1.056	1.056	1.036	1.026	1.026	1.026	1.016	1.006	.996	.976	.966	.976
6	.896	.896	.896	.946	.956	.946	.946	.956	.976	.996	.996	.996	1.026	1.026
7	1.046	1.046	1.056	1.056	1.046	1.036	1.036	1.026	.996	.986	.966	.956	.936	.926
8	.775	.755	.765	.745	.745	.715	.735	.725	.725	.715	.705	.695	.695	.695
9	.737	.747	.747	.747	.737	.737	.757	.737	.747	.737	.737	.737	.737	.707
10	.467	.427	.377	.317	.287	.217	.187	.147	.057	.047	.047	.047	.047	.077
11	.293	.303	.333	.353	.373	.383	.393	.413	.413	.413	.423	.433	.433	.443
12	.479	.579	.579	.549	.559	.579	.579	.579	.579	.579	.589	.589	.599	.599
13	.723	.733	.763	.763	.773	.783	.813	.813	.813	.813	.813	.833	.843	.843
14	.833	.863	.883	.903	.903	.883	.883	.863	.853	.853	.853	.853	.853	.853
15	.868	.858	.868	.888	.888	.888	.898	.918	.938	.938	.918	.918	.938	.908
16	.908	.908	.918	.908	.898	.888	.878	.868	.868	.848	.828	.828	.838	.828
17	.947	.947	.947	.987	.997	1.017	1.037	1.027	1.027	1.057	1.077	1.087	1.087	1.097
18	1.160	1.160	1.140	1.160	1.170	1.150	1.160	1.150	1.130	1.150	1.150	1.150	1.150	1.150
19	1.156	1.166	1.166	1.166	1.156	1.166	1.176	1.186	1.186	1.156	1.156	1.166	1.156	1.136
20	1.041	1.021	1.021	1.021	1.011	.991	.971	.971	.971	.971	.971	.971	.941	.961
21	.966	.956	.976	.976	.976	*.986*	.986	.986	.986	.976	.976	.966	.946	.936
22	.861	.861	.871	.891	.891	.871	.861	.821	.811	.811	.781	.781	.771	.771
23	.789	.789	.759	.749	.749	.739	.729	.729	.729	.729	.689	.729	.689	.679
24	.705	.705	.705	.725	.755	.725	.685	.695	.695	.675	.665	.665	.645	.645
25	.624	.624	.644	.644	.664	.684	.664	.654	.654	.654	.654	.654	.664	.674
26	.674	.654	.674	.694	.684	.694	.674	.654	.634	.624	.634	.634	.624	.634
27	.535	.555	.555	.535	.535	.525	.525	.495	.455	.455	.455	.445	.445	.445
28	.500	.520	.520	.530	.540	.550	.560	.560	.560	.570	.590	.600	.610	.620
29	.690	.700	.710	.720	.740	.740	.750	.750	.760	.770	.780	.790	.790	.790
30	.822	.832	.832	.832	.812	.822	.802	.792	.782	.782	.782	.792	.792	.792
Means	.7977	.8024	.8044	.8097	**.8111**	.8064	.8067	.8027	.7984	.7967	.7957	.7974	.7957	.7961
Means in millimeters, 700+	56.85	56.96	57.01	57.16	**57.19**	57.06	57.09	56.99	56.85	56.83	56.80	56.83	56.80	56.80

[a] By constant +.036 to include 7 p. m. on the 12th; subsequently by constant +.030.

[b] Aneroid barometer No. 2651.

[c] Elevation changed at 7.30 p. m. on the 12th from 31.7 feet [9.66^m] to 24.2 feet [7.38^m].

SEPTEMBER, 1881.

B.	Gravity correction
30	0.07[illegible]
31	0.07[illegible]

TABLE II.—*Atmospheric pressure (reduced to sea), September,* 1881.

Washington mean time. Reduce to local mean time by adding 49^m

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Correction for instrumental error used.	Daily means in *mm.*, 700+	Date.
.629	.619	.619	.619	.619	.619	.639	.609	.609	.609	.6202	.649	.599	.050	— .007	52.33	1
.785	.795	.795	.795	.845	.865	.865	.875	.895	.905	.7462	.905	.625	.280	— .021	55.53	2
1.057	1.057	1.077	1.097	1.097	1.107	1.117	1.107	1.127	1.137	1.0474	1.137	.947	.190	— .009	63.18	3
1.240	1.240	1.210	1.190	1.180	1.150	1.120	1.110	1.100	1.100	**1.1896**	**1.250**	1.100	.150	— .006	**66.81**	4
.946	.936	.926	.936	.916	.906	.906	.906	.906	.896	.9789	1.076	.896	.180	— .010	61.45	5
1.046	1.046	1.046	1.046	1.046	1.046	1.046	1.046	1.046	1.056	.9972	1.056	.896	.160	— .010	61.91	6
.906	.876	.856	.856	.836	.806	.786	.776	.756	.746	.9298	1.056	.746	.310	— .020	60.21	7
.685	.685	.685	.695	.695	.705	.735	.735	.735	.735	.[illegible]188	.775	.685	.090	— .011	54.85	8
.687	.657	.657	.637	.637	.607	.567	.537	.527	.497	.6816	.757	.497	.260	— .019	53.91	9
.087	.147	.177	.197	.217	.237	.247	.257	.267	.277	**.2024**	.467	**.047**	.420	— .009	**41.72**	10
.463	.463	.463	.463	.463	.463	.463	.463	.473	.483	.4192	.483	.293	.190	+ .007	47.23	11
.609	.619	.629	.629	.649	.693	.693	.713	.713	.713	.6115	.713	.479	.234	— .017	52.13	12
.843	.843	.843	.883	.883	.873	.863	.863	.863	.853	.8222	.883	.723	.160	— .047	57.46	13
.853	.863	.863	.863	.863	.863	.863	.863	.863	.863	.8647	.903	.833	.070	— .047	58.56	14
.908	.908	.918	.918	.928	.928	.928	.928	.928	.878	.9084	.938	.858	.080	— .042	59.65	15
.828	.818	.818	.838	.858	.858	.888	.888	.888	.898	.8663	.918	.818	.100	— .032	58.58	16
1.107	1.107	1.127	1.147	1.147	1.167	1.167	1.147	1.147	1.147	1.0728	1.167	.947	.220	— .023	63.84	17
1.150	1.170	1.170	1.180	1.180	1.180	1.170	1.170	1.170	1.170	1.1600	1.180	1.130	.050	— .030	66.05	18
1.156	1.156	1.156	1.156	1.126	1.126	1.106	1.086	1.086	1.086	1.1472	1.186	1.086	.100	— .044	65.72	19
.951	.941	.951	.921	.921	.921	.911	.961	.961	.961	.9681	1.041	.911	.130	— .039	61.17	20
.936	.926	.926	.886	.886	.886	.886	.876	.866	.866	.9389	.986	.866	.120	— .024	60.44	21
.771	.751	.771	.771	.771	.781	.791	.791	.771	.761	.8077	.891	.751	.140	— .039	57.11	22
.679	.679	.659	.659	.679	.699	.689	.699	.689	.699	.7128	.789	.659	.130	— .021	54.70	23
.635	.635	.625	.625	.615	.625	.625	.625	.625	.625	.6646	.755	.615	.140	— .015	53.48	24
.664	.654	.664	.694	.684	.664	.664	.664	.664	.664	.6598	.694	.624	.070	— .026	53.35	25
.614	.614	.614	.614	.604	.604	.584	.604	.564	.554	.6315	.694	.554	.140	— .016	52.64	26
.445	.445	.445	.455	.475	.455	.455	.465	.475	.475	.4812	.555	.445	.110	— .035	48.81	27
.630	.630	.640	.640	.640	.650	.660	.680	.710	.710	.6008	.710	.500	.210	— .020	51.84	28
.800	.830	.830	.860	.840	.840	.840	.860	.860	.840	.7867	.860	.690	.170	— .040	56.58	29
.792	.752	.742	.752	.752	.722	.702	.692	.692	.692	.7737	.832	.692	.140	— .058	56.24	30
.7967	**.7954**	.7967	.8067	.8017	.8015	.7992	.7999	.7995	.7955	.8003	.8769	.7171	.1598	— .024	....	
56.83	**56.78**	56.83	56.94	56.96	56.96	56.88	56.91	56.91	56.80	56.91	58.86	54.80	4.06	— 0.61	56.92	

OCTOBER, 1881.

TABLE III.—*Atmospheric pressure (reduced to sea)*,[a] *October*, 1881.

B.	Gravity correction.
28	0.070
29	0.072

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.719	.709	.709	.669	.689	.669	.669	.669	.659	.619	.609	.589	.569	.559
2	.444	.434	.444	.444	.444	.454	.474	.474	.474	.494	.504	.504	.514	.524
3	.533	.533	.543	.543	.553	.553	.563	.543	.543	.543	.563	.573	.583	.583
4	.475	.455	.445	.435	.425	.425	.405	.395	.375	.365	.375	.375	.375	.365
5	.378	.388	.388	.398	.398	.398	.418	.418	.428	.428	.428	.448	.458	.458
6	.531	.521	.531	.531	.521	.531	.521	.531	.531	.531	.531	.531	.541	.541
7	.649	.659	.669	.679	.679	.679	.679	.709	.719	.709	.719	.719	.709	.709
8	.629	.589	.579	.579	.579	.579	.569	.559	.569	.539	.539	.539	.539	.559
9	.536	.546	.576	.576	.546	.536	.546	.576	.566	.576	.586	.606	.626	.626
10	.747	.777	.777	.787	.787	.787	.797	.807	.817	.827	.837	.857	.867	.867
11	.842	.842	.852	.852	.852	.862	.872	.882	.892	.882	.882	.902	.922	.922
12	.940	.940	.940	.940	.940	.940	.950	.940	.940	.940	.930	.930	.920	.900
13	.928	.928	.928	.948	.948	.948	.948	.958	.948	.958	.958	.958	.958	.968
14	1.019	1.009	1.029	1.029	1.029	1.029	1.009	1.009	.989	.969	.969	.959	.929	.929
15	.787	.757	.737	.737	.727	.727	.707	.697	.697	.687	.677	.687	.687	.677
16	.518	.518	.488	.488	.498	.518	.528	.538	.538	.538	.538	.548	.548	.548
17	.613	.633	.643	.653	.693	.713	.713	.713	.773	.773	.773	.783	.783	.793
18	.725	.705	.705	.695	.695	.695	.705	.725	.725	.695	.695	.725	.735	.745
19	.887	.907	.927	.937	.957	.967	.977	1.017	1.047	1.047	1.077	1.097	1.097	1.117
20	1.234	1.244	1.234	1.224	1.224	1.214	1.164	1.144	1.134	1.114	1.104	1.074	1.044	1.044
21	1.049	1.029	1.039	1.049	1.069	1.079	1.079	1.109	1.149	1.159	1.169	1.189	1.189	1.189
22	1.340	1.340	1.380	1.390	1.400	1.420	1.440	1.440	1.440	1.430	1.430	1.440	1.450	1.450
23	1.482	1.472	1.472	1.472	1.472	1.462	1.452	1.462	1.462	1.452	1.432	1.412	1.402	1.412
24	1.304	1.294	1.284	1.274	1.264	1.264	1.274	1.274	1.254	1.244	1.224	1.234	1.244	1.244
25	1.298	1.308	1.318	1.328	1.338	1.338	1.338	1.338	1.358	1.358	1.348	1.358	1.368	1.368
26	1.338	1.358	1.368	1.368	1.368	1.368	1.368	1.378	1.368	1.358	1.358	1.348	1.358	1.348
27	1.375	1.375	1.375	1.405	1.405	1.415	1.415	1.415	1.425	1.435	1.455	1.475	1.445	1.435
28	1.330	1.310	1.290	1.280	1.270	1.250	1.250	1.240	1.240	1.220	1.220	1.200	1.200	1.190
29	1.055	1.055	1.055	1.045	1.065	1.055	1.055	1.045	1.035	1.015	1.015	1.005	.995	1.005
30	.862	.832	.832	.822	.812	.782	.782	.782	.762	.732	.732	.712	.712	.712
31	.748	.748	.768	.768	.778	.788	.808	.828	.848	.848	.868	.908	.928	.938
Means	.8811	.8779	.8815	.8821	.8847	.8853	.8863	.8908	.8937	.8866	.8885	.8931	.8934	.8944
Means in millimeters, 700+	58.97	58.88	58.99	58.99	59.07	59.07	59.09	59.22	59.29	59.12	59.14	59.27	59.27	59.29

[a] By constant +.030.

[b] Aneroid barometer No. 2651.

OCTOBER, 1881.

TABLE III.—*Atmospheric pressure* (*reduced to sea*), *October*, 1881.

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Correction for instrumental error used.	Daily means in *mm.*, 700+	Date.
.549	.539	.529	.489	.469	.459	.449	.439	.419	.419	.5778	.719	.419	.300	—.041	51.26	1
.534	.544	.544	.544	.544	.544	.544	.544	.524	.524	.5007	.544	.434	.110	—.026	49.32	2
.573	.573	.573	.563	.553	.533	.523	.503	.483	.463	.5455	.583	.463	.120	—.027	50.45	3
.365	.365	.365	.395	.405	.395	.415	.405	.395	.375	**.3988**	.475	**.365**	.110	—.015	**46.72**	4
.478	.508	.508	.478	.488	.498	.518	.538	.538	.548	.4555	.548	.378	.170	—.012	48.17	5
.571	.571	.571	.601	.601	.611	.611	.631	.631	.641	.5610	.641	.521	.120	—.029	50.84	6
.699	.709	.679	.669	.669	.669	.669	.649	.629	.619	.6811	.719	.619	.100	—.031	53.89	7
.569	.559	.549	.549	.549	.529	.539	.539	.539	.529	.5582	.629	.529	.100	—.031	50.76	8
.636	.646	.676	.696	.696	.706	.726	.746	.736	.736	.6260	.746	.536	.210	—.024	52.48	9
.867	.857	.867	.867	.867	.867	.867	.867	.857	.847	.8320	.867	.747	.120	—.033	57.72	10
.942	.942	.942	.942	.952	.952	.952	.952	.952	.952	.9058	.952	.842	.110	—.028	59.60	11
.910	.910	.920	.920	.920	.920	.920	.930	.930	.930	.9292	.950	.900	.050	—.030	60.18	12
.978	.978	.988	.998	1.008	1.008	1.018	1.018	1.018	.998	.9705	1.018	.928	.090	—.032	61.22	13
.909	.879	.909	.879	.859	.839	.819	.809	.789	.779	.9323	1.029	.779	.250	—.041	60.26	14
.677	.667	.657	.637	.637	.627	.597	.577	.557	.537	.6732	.787	.537	.250	—.023	53.68	15
.548	.548	.578	.578	.568	.568	.588	.628	.618	.628	.5501	.628	.488	.140	—.022	50.56	16
.803	.793	.793	.783	.773	.763	.743	.733	.723	.713	.7363	.803	.613	.190	—.037	55.28	17
.755	.765	.825	.835	.845	.865	.875	.885	.885	.875	.7658	.885	.695	.190	—.025	56.04	18
1.147	1.147	1.167	1.177	1.187	1.217	1.227	1.237	1.237	1.247	1.0853	1.247	.887	.360	—.023	64.15	19
1.024	1.014	1.004	.984	1.004	1.004	1.024	1.024	1.044	1.034	1.0982	1.244	.984	.260	—.036	64.47	20
1.179	1.189	1.179	1.169	1.179	1.209	1.239	1.259	1.299	1.319	1.1569	1.319	1.029	.290	—.031	65.98	21
1.450	1.460	1.460	1.460	1.470	1.470	1.470	1.500	1.500	1.500	**1.4388**	**1.500**	1.340	.160	—.020	**73.14**	22
1.402	1.382	1.382	1.382	1.382	1.382	1.372	1.352	1.332	1.332	1.4174	1.482	1.332	.150	—.018	72.58	23
1.244	1.244	1.254	1.254	1.244	1.244	1.264	1.284	1.284	1.294	1.2619	1.304	1.224	.080	—.026	68.64	24
1.368	1.368	1.338	1.348	1.338	1.328	1.328	1.328	1.328	1.328	1.3409	1.368	1.298	.070	—.022	70.62	25
1.348	1.358	1.368	1.368	1.358	1.358	1.358	1.368	1.368	1.378	1.3618	1.378	1.338	.040	—.032	71.18	26
1.435	1.435	1.425	1.415	1.415	1.385	1.375	1.365	1.355	1.345	1.4083	1.475	1.345	.130	—.035	72.35	27
1.170	1.170	1.160	1.150	1.140	1.120	1.110	1.110	1.100	1.090	1.2004	1.330	1.090	.240	—.040	67.07	28
.995	.995	.955	.935	.935	.935	.915	.905	.885	.875	.9929	1.065	.875	.190	—.045	61.81	29
.702	.702	.702	.712	.702	.722	.732	.732	.722	.732	.7512	.862	.702	.160	—.048	55.67	30
.948	.988	.998	1.018	1.048	1.068	1.078	1.098	1.128	1.128	.9297	1.128	.748	.380	—.042	59.95	31
.8960	.8969	.8995	.8966	.8969	.8966	.8989	**.9016**	.8968	.8939	.8912	.975	.806	.169	—.0298	------	
59.34	59.37	59.45	59.37	59.37	59.37	59.42	**59.50**	59.37	59.29	59.22	61.35	57.06.	4.29	—0.755	59.23	

NOVEMBER, 1881.

TABLE IV.—*Atmospheric pressure (reduced to sea)*,[a] *November*, 1881.

Washington mean time. Reduce to local mean time by adding 49^{m}

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H=29.000+$ $\phi=+81^{\circ}\ 44'$ $\lambda=-64^{\circ}\ 45'=-4^{h}\ 19^{m}$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	1.137	1.147	1.147	1.157	1.157	1.157	1.157	1.157	1.157	1.157	1.157	1.127	1.117	1.107
2	1.091	1.091	1.111	1.121	1.121	1.131	1.151	1.151	1.141	1.131	1.121	1.121	1.121	1.121
3	1.071	1.061	1.051	1.051	1.051	1.041	1.021	1.021	1.011	1.011	1.011	1.011	1.011	1.001
4	1.031	1.041	1.031	1.031	1.031	1.021	1.001	1.011	.991	.991	.981	.971	.971	.961
5	.664	.634	.594	.584	.554	.524	.464	.444	.424	.404	.384	.384	.384	.384
6	.322	.352	.362	.352	.352	.362	.322	.332	.332	.292	.272	.252	.252	.222
7	.315	.335	.345	.345	.355	.365	.365	.375	.435	.445	.455	.475	.475	.485
8	.535	.545	.565	.545	.535	.535	.535	.535	.535	.535	.545	.545	.545	.565
9	.728	.738	.748	.758	.768	.778	.778	.778	.788	.788	.798	.798	.798	.808
10	.828	.848	.848	.848	.848	.838	.838	.868	.858	.838	.828	.828	.828	.828
11	.840	.840	.840	.840	.830	.830	.830	.830	.850	.840	.850	.860	.870	.880
12	1.137	1.147	1.177	1.177	1.187	1.207	1.197	1.197	1.197	1.197	1.197	1.177	1.177	1.177
13	1.084	1.084	1.064	1.054	1.044	1.034	1.024	1.024	1.014	1.004	.994	.984	.984	.974
14	.995	.985	.995	1.005	1.005	1.005	1.015	1.025	1.025	1.025	1.035	1.035	1.045	1.065
15	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.080	1.070	1.060	1.050	1.040	1.030
16	.896	.886	.886	.876	.876	.866	.866	.856	.846	.836	.826	.816	.816	.816
17	.926	.926	.926	.926	.926	.936	.936	.936	.936	.936	.926	.916	.916	.916
18	.826	.826	.836	.826	.826	.816	.796	.806	.796	.786	.766	.756	.746	.736
19	.568	.558	.558	.558	.558	.558	.558	.558	.568	.578	.568	.568	.558	.568
20	.501	.501	.491	.481	.471	.451	.441	.441	.431	.401	.391	.381	.371	.361
21	.502	.522	.532	.542	.562	.592	.612	.612	.632	.642	.662	.662	.662	.682
22	.561	.541	.531	.501	.481	.451	.411	.391	.381	.361	.341	.331	.321	.311
23	.229	.229	.259	.269	.279	.319	.339	.349	.379	.389	.409	.439	.449	.479
24	.598	.618	.618	.638	.648	.648	.658	.668	.678	.678	.688	.688	.698	.708
25	.798	.818	.828	.828	.818	.818	.818	.838	.828	.838	.838	.848	.848	.848
26	.814	.814	.804	.794	.774	.764	.754	.744	.744	.734	.744	.754	.754	.744
27	.768	.768	.778	.778	.778	.768	.778	.778	.778	.778	.778	.788	.798	.798
28	.780	.770	.770	.760	.760	.760	.760	.760	.730	.730	.710	.710	.700	.700
29	.684	.674	.694	.694	.694	.684	.674	.674	.684	.684	.684	.694	.694	.704
30	.731	.731	.731	.731	.731	.731	.731	.731	.731	.711	.701	.691	.681	.691
Means	.7687	.7710	**.7740**	.7723	.7707	.7697	.7643	.7663	.7660	.7603	.7573	.7553	.7543	.7557
Means in millimeters 700+	56.12	56.17	**56.24**	56.19	56.17	56.14	55.99	56.04	56.04	55.89	55.82	55.77	55.74	55.79

[a] By constant +.030.

[b] Aneroid barometer No. 2651.

B.	Gravity correction.
30	0.074
31	0.077

NOVEMBER, 1881.

TABLE IV.—*Atmospheric pressure* (*reduced to sea*), *November*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Correction for instrumental error used.	Daily means in *mm.*, 700+	Date.
1.107	1.107	1.097	1.097	1.097	1.097	1.087	1.087	1.087	1.087	1.1245	1.157	1.087	.070	—.053	65.13	1
1.121	1.111	1.101	1.101	1.101	1.091	1.091	1.081	1.081	1.081	1.1118	1.151	1.081	.070	—.049	64.83	2
1.011	1.011	1.011	1.011	1.021	1.021	1.031	1.031	1.031	1.031	1.0264	1.071	1.001	.070	—.039	62.64	3
.951	.921	.911	.861	.831	.821	.781	.751	.721	.711	.9302	1.041	.711	.330	—.039	60.21	4
.394	.364	.354	.334	.314	.304	.304	.274	.264	.274	.4169	.664	.264	.400	—.026	47.18	5
.222	.232	.252	.252	.252	.272	.282	.282	.302	.312	**.2932**	.362	**.222**	.140	—.018	**44.03**	6
.495	.515	.515	.515	.525	.525	.545	.555	.555	.555	.4529	.555	.315	.240	—.015	48.10	7
.595	.605	.635	.635	.665	.685	.695	.705	.725	.725	.5946	.725	.535	.190	—.035	51.70	8
.818	.828	.828	.828	.828	.828	.828	.818	.818	.818	.7955	.828	.728	.100	—.032	56.80	9
.828	.828	.838	.838	.848	.838	.838	.848	.858	.858	.8413	.868	.828	.040	—.032	57.95	10
.920	.930	.950	.960	1.000	1.030	1.040	1.050	1.080	1.110	.9125	1.110	.830	.280	—.040	59.75	11
1.177	1.177	1.167	1.157	1.137	1.137	1.137	1.127	1.137	1.117	**1.1674**	**1.270**	1.117	.090	—.033	**66.23**	12
.984	.984	.994	.994	.994	.994	.994	.984	.984	.984	1.0107	1.084	.974	.110	—.046	62.27	13
1.075	1.085	1.095	1.105	1.105	1.115	1.115	1.115	1.115	1.115	1.0542	1.115	.985	.130	—.035	63.36	14
1.020	1.010	.990	.980	.960	.940	.930	.930	.910	.910	1.0296	1.100	.910	.190	—.050	62.75	15
.816	.826	.856	.886	.886	.896	.906	.906	.916	.926	.8660	.926	.816	.110	—.044	58.58	16
.906	.916	.906	.886	.886	.886	.876	.866	.846	.836	.9081	.936	.836	.100	—.044	59.65	17
.726	.716	.706	.706	.686	.676	.656	.636	.616	.596	.7443	.836	.596	.240	—.044	55.48	18
.568	.578	.568	.558	.538	.528	.528	.518	.508	.498	.5530	.578	.498	.080	—.042	50.64	19
.371	.371	.401	.421	.441	.441	.451	.471	.471	.501	.4356	.501	.361	.140	—.029	47.66	20
.682	.682	.682	.672	.672	.652	.612	.602	.582	.572	.6178	.682	.502	.180	—.038	52.28	21
.301	.291	.271	.271	.271	.251	.241	.231	.231	.231	.3543	.561	.231	.330	—.019	45.58	22
.509	.519	.529	.529	.539	.559	.569	.579	.579	.589	.4298	.589	.229	.360	—.021	47.51	23
.728	.758	.768	.758	.758	.758	.768	.768	.768	*.788*	.7022	*.788*	.598	.190	—.032	54.42	24
.848	.848	.868	.858	.858	.848	.828	.828	.838	.818	.8355	.868	.798	.070	—.042	57.82	25
.744	.744	.744	.744	.744	.744	.744	.744	.744	.754	.7578	.814	.734	.080	—.036	55.84	26
.798	.798	.798	.798	.798	.778	.778	.788	.768	.768	.7826	.798	.768	.030	—.052	56.48	27
.680	.700	.700	.690	.680	.670	.660	.660	.660	.660	.7150	.780	.660	.120	—.040	54.75	28
.714	.714	.724	.734	.744	.734	.724	.714	.714	.724	.7023	.744	.674	.070	—.036	54.42	29
.661	.661	.621	.601	.571	.521	.481	.451	.441	.441	.6460	.731	.441	.290	—.039	52.99	30
.7590	.7610	.7627	.7593	.7583	.7547	.7510	.7463	**.7450**	.7463	.7604	.839	.678	.161	—.0367	------	
55.87	55.92	55.97	55.87	55.84	55.77	55.67	55.53	**55.51**	55.53	55.89	57.90	53.80	4.09	—.934	55.90	

DECEMBER, 1881.

TABLE V.—*Atmospheric pressure (reduced to sea)*,[a] *December*, 1881.

B.	Gravity correction.
28	0.070
29	0.072

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	.413	.433	.443	.403	.353	.353	.333	.293	.253	.233	.213	.183	.153	.133
2	.223	.263	.283	.283	.273	.303	.313	.323	.323	.323	.353	.373	.403	.413
3	.464	.464	.484	.484	.484	.484	.474	.484	.484	.494	.504	.524	.524	.524
4	.583	.593	.613	.613	.623	.623	.633	.633	.633	.633	.633	.633	.643	.643
5	.641	.641	.631	.631	.631	.621	.621	.621	.621	.621	.621	.631	.651	.651
6	.735	.735	.745	.725	.735	.735	.735	.745	.745	.745	.745	.755	.755	.765
7	.790	.800	.800	.800	.800	.800	.800	.800	.820	.840	.860	.870	.880	.890
8	.972	.992	.982	1.002	1.012	1.012	1.002	1.012	1.032	1.032	1.032	1.032	1.032	1.032
9	.901	.881	.861	.851	.831	.821	.821	.821	.821	.821	.831	.821	.811	.821
10	.813	.813	.813	.833	.833	.853	.853	.863	.863	.863	.873	.883	.893	.893
11	.827	.817	.787	.777	.757	.727	.687	.687	.697	.687	.687	.687	.687	.707
12	.588	.538	.568	.548	.538	.508	.498	.498	.488	.478	.468	.438	.438	.428
13	.439	.429	.429	.429	.419	.379	.379	.379	.389	.379	.379	.379	.379	.399
14	.526	.526	.536	.546	.556	.556	.556	.556	.556	.566	.576	.576	.596	.606
15	.647	.657	.667	.677	.687	.687	.697	.687	.707	.737	.717	.727	.737	.747
16	.800	.800	.800	.790	.800	.790	.790	.770	.760	.760	.750	.740	.720	.720
17	.724	.714	.724	.724	.724	.734	.734	.734	.754	.764	.764	.764	.754	.764
18	.760	.760	.760	.760	.760	.760	.760	.750	.760	.750	.750	.770	.770	.770
19	.812	.812	.812	.832	.832	.822	.822	.802	.802	.812	.812	.812	.812	.792
20	.704	.704	.694	.704	.704	.704	.704	.704	.704	.714	.714	.704	.724	.734
21	.747	.737	.737	.747	.747	.717	.707	.697	.697	.677	.647	.637	.627	.617
22	.443	.443	.443	.443	.443	.453	.453	.443	.443	.453	.443	.453	.463	.463
23	.506	.496	.496	.456	.446	.406	.396	.396	.386	.376	.386	.356	.356	.376
24	.357	.367	.357	.367	.377	.387	.397	.387	.387	.387	.397	.417	.427	.457
25	.596	.606	.616	.616	.616	.616	.646	.636	.646	.656	.676	.676	.696	.686
26	.808	.808	.818	.818	.838	.828	.828	.848	.848	.848	.848	.848	.858	.888
27	.997	1.007	1.017	1.027	1.037	1.037	1.037	1.037	1.057	1.087	1.097	1.107	1.107	1.107
28	1.166	1.166	1.176	1.176	1.166	1.146	1.136	1.106	1.096	1.086	1.076	1.076	1.076	1.076
29	1.018	1.018	1.008	1.008	1.008	.998	.998	.978	.948	.938	.928	.918	.918	.918
30	.884	.884	.884	.884	.884	.884	.894	.894	.924	.924	.934	.934	.944	.954
31	1.046	1.046	1.056	1.056	1.046	1.016	1.016	1.006	.996	.986	.956	.936	.896	.896
Means	.7074	.7097	.7110	.7100	.7084	.7019	.7006	.6965	.6981	.6990	.6990	.6987	.7010	.7055
Means in millimeters, 700+	54.55	54.62	54.65	54.62	54.57	54.42	54.40	54.26	54.31	54.34	54.34	54.34	54.40	54.52

[a] By constant +.030.

[b] Aneroid barometer No. 2651.

DECEMBER, 1881.

TABLE V.—*Atmospheric pressure (reduced to sea), December, 1881.*

B.	Gravity correction
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

$H = 29.000 +$ $\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Correction for instrumental error used.	Daily means in *mm.*, 700+	Date.
.133	.133	.133	.153	.143	.133	.163	.213	.193	.213	**.2418**	.443	**.133**	.310	—.027	**42.73**	1
.423	.433	.453	.453	.473	.473	.473	.473	.463	.463	.3763	.473	.223	.250	—.027	46.13	2
.534	.534	.544	.544	.554	.554	.564	.564	.564	.564	.5165	.564	.464	.100	—.026	49.69	3
.643	.653	.663	.663	.663	.653	.663	.643	.633	.643	.6355	.663	.583	.080	—.037	52.69	4
.671	.671	.671	.671	.681	.691	.701	.711	.721	.721	.6560	.721	.621	.100	—.039	53.25	5
.775	.785	.795	.795	.795	.795	.805	.805	.795	.795	.7642	.805	.725	.080	—.035	55.99	6
.900	.910	.910	.920	.920	.930	.940	.950	.950	.950	.8679	.950	.790	.160	—.050	58.63	7
1.032	1.032	1.032	1.012	1.002	.982	.972	.962	.942	.922	1.0028	1.032	.922	.110	—.048	62.07	8
.841	.821	.821	.821	.821	.821	.821	.821	.811	.811	.8302	.901	.811	.090	—.049	57.67	9
.893	.893	.893	.873	.863	.863	.843	.833	.823	.813	.8555	.893	.813	.080	—.057	58.33	10
.707	.727	.727	.717	.697	.677	.677	.627	.617	.607	.7082	.827	.607	.220	—.033	54.57	11
.428	.428	.438	.438	.458	.468	.458	.438	.438	.428	.4788	.588	.428	.160	—.032	48.75	12
.419	.419	.429	.429	.449	.469	.489	.509	.519	.519	.4265	.519	.379	.140	—.031	47.40	13
.616	.616	.626	.626	.646	.656	.656	.656	.646	.666	.5935	.666	.526	.140	—.034	51.67	14
.767	.767	.767	.767	.787	.777	.777	.787	.807	.797	.7324	.807	.647	.160	—.043	55.18	15
.720	.730	.730	.720	.730	.730	.730	.710	.720	.720	.7512	.800	.710	.090	—.050	55.67	16
.764	.784	.774	.764	.754	.754	.754	.764	.764	.764	.7507	.784	.714	.070	—.046	55.67	17
.780	.790	.800	.790	.800	.800	.810	.810	.810	.810	.7767	.810	.750	.060	—.040	56.32	18
.792	.792	.782	.742	.742	.732	.732	.712	.712	.712	.7849	.832	.712	.120	—.038	56.53	19
.754	.744	.774	.774	.764	.764	.754	.754	.754	.754	.7294	.774	.694	.080	—.036	55.10	20
.587	.577	.557	.527	.487	.457	.447	.447	.437	.427	.6120	.747	.427	.320	—.033	52.13	21
.483	.493	.523	.523	.523	.523	.523	.523	.523	.523	.4768	.523	.443	.080	—.027	48.70	22
.396	.416	.416	.406	.416	.426	.426	.416	.386	.366	.4127	.506	.356	.150	—.024	47.08	23
.467	.497	.527	.537	.557	.567	.577	.597	.607	.617	.4591	.617	.357	.260	—.023	48.25	24
.716	.726	.726	.736	.736	.746	.756	.766	.786	.796	.6864	.796	.596	.200	—.044	54.01	25
.898	.908	.928	.928	.938	.948	.958	.958	.978	.988	.8818	.988	.808	.180	—.052	58.99	26
1.117	1.147	1.147	1.167	1.167	1.167	1.167	1.167	1.167	1.167	**1.0974**	1.167	.997	.170	—.043	**64.47**	27
1.066	1.066	1.066	1.056	1.056	1.056	1.056	1.056	1.056	1.046	1.0960	**1.176**	1.046	.130	—.034	64.42	28
.918	.918	.928	.918	.908	.898	.898	.888	.878	.878	.9430	1.018	.878	.140	—.062	60.54	29
.984	.994	1.014	1.024	1.034	1.044	1.034	1.034	1.054	1.044	.9569	1.054	.884	.170	—.056	60.90	30
.846	.826	.776	.746	.726	.706	.686	.676	.656	.636	.8848	1.056	.636	.420	—.054	59.07	31
.7119	.7171	**.7216**	.7174	.7190	.7181	.7197	.7184	.7165	.7148	.7092	.790	.635	.155	—.0397	--------	
54.67	54.80	**54.92**	54.80	54.85	54.82	54.85	54.82	54.77	54.76	54.60	56.65	52.72	3.94	—1.012	54.60	

AUGUST, 1881.

TABLE VI.—*Atmospheric pressure (reduced to sea),*[a] *August*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea $\left\{ \begin{matrix} 3.0^c \\ 31.7 \end{matrix} \right\}$ feet $= \left\{ \begin{matrix} .91 \\ 9.66 \end{matrix} \right\}$ meters.

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.	B.	Gravity correction.
28	0.070	30	0.074
29	0.072	31	0.077

Date.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700 +
1	------	------	------	------	------	------	------	------	------	------	------
2	------	------	------	------	------	------	------	------	------	------	------
3	------	------	------	------	------	------	------	------	------	------	------
4	------	------	------	------	------	------	------	------	------	------	------
5	------	------	------	------	------	------	------	------	------	------	------
6	------	------	------	------	------	------	------	------	------	------	------
7	------	------	------	------	------	------	------	------	------	------	------
8	.549	.534	.495	.454	.427	.407	.4777	.549	.407	.142	48.72
9	.438	.410	.398	.425	.445	.475	**.4318**	.475	**.398**	.077	**47.56**
10	.523	.558	.591	.648	.673	.706	.6165	.706	.523	.183	52.23
11	.744	.773	.778	.748	.790	.793	.7710	.793	.744	.049	56.17
12	.807	.863	.889	.930	.958	.966	.9022	.966	.807	.159	59.50
13	.968	.965	.930	.901	.873	.843	.9133	.968	.843	.125	59.78
14	.825	.826	.808	.803	.818	.823	.8170	.826	.803	.023	57.34
15	.847	.874	.867	.897	.903	.923	.8852	.923	.847	.076	59.07
16	.928	.973	.985	.988	.977	.977	.9713	.988	.928	.060	61.25
17	.985	1.010	1.011	1.018	1.023	1.025	1.0120	1.025	.985	.040	62.29
18	1.051	1.020	1.006	.959	.919	.900	.9758	1.051	.900	.151	61.37
19	.906	.886	.846	.821	.803	.812	.8457	.906	.803	.103	58.07
20	.819	.808	.802	.803	.802	.797	.8052	.819	.797	.022	57.04
21	.791	.763	.736	.721	.718	.710	.7398	.791	.710	.081	55.38
22	.731	.768	.794	.832	.886	.892	.8172	.892	.731	.161	57.34
23	.913	[d] *.960*	.952	.964	.987	1.[illegible]	.9650	1.014	.913	.101	61.10
24	1.051	1.085	1.109	1.113	1.118	1.117	**1.0988**	**1.118**	1.051	.067	**64.50**
25	1.116	1.116	1.086	1.086	1.084	1.097	1.0975	1.116	1.084	.032	64.47
26	1.080	1.059	.988	.892	.819	.773	.9352	1.080	.773	.307	60.34
27	.782	.794	.765	.759	.759	.750	.7682	.794	.750	.044	56.09
28	.770	.786	.810	.842	.859	.859	.8210	.859	.770	.089	57.44
29	[e] .883	.918	.962	.972	.971	.944	.9417	.972	.883	.089	60.51
30	.950	.924	.900	.862	.817	.775	.8713	.950	.775	.175	58.71
31	.763	.735	.726	.697	.688	.667	.7127	.763	.667	.096	54.70
Means	.8425	**.8503**	.8431	.8390	.8382	**.8352**	.84138	.8893	.7872	.1022	------
Means in millimeters, 700 +	57.97	**58.18**	58.00	57.90	57.87	**57.80**	57.95	59.17	56.58	2.59	57.96

[a] By constant +.003 to include 12 midn't, August 18; subsequently by constant +.016.

[b] Marine barometer No. 2418, read to include 12 midn't, August 18; subsequently mercurial No. 229 observed.

[c] Three feet [.91^m] to include 12 midn't, August 18; subsequently 31.7 feet [9.66^m].

[d] Interpolated from Goldschmidt's recording aneroid; observation missed.

[e] Regular aneroid substituted; mercurial evidently read .05 too high.

SEPTEMBER, 1881.

TABLE VII.—*Atmospheric pressure (reduced to sea)*,[a] *September*, 1881.

n.	Gravity correction.	n.	Gravity correction.
28	0.070	30	0.074
29	0.072	31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea $\left\{ \begin{matrix} 31.7^c \\ 24.2 \end{matrix} \right\}$ feet $= \left\{ \begin{matrix} 9.66 \\ 7.38 \end{matrix} \right\}$ meters.

$H = 29.000 +$ $\phi = +81^\circ\ 44'$ $\lambda = -64^\circ\ 45' = -4^h\ 19^m$

Date.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700+
1	.641	.605	.603	.619	.621	.616	.6175	.641	.603	.038	52.28
2	.612	.646	.734	.798	.852	.887	.7548	.887	.612	.275	55.77
3	.975	1.009	1.047	1.059	1.069	1.131	1.1483	1.131	.975	.156	63.20
4	1.174	1.229	1.248	1.238	1.180	1.070	**1.1898**	**1.248**	1.070	.178	**66.81**
5	1.076	1.041	.981	.949	.908	.892	.9745	1.076	.892	.184	61.32
6	.919	.959	.983	1.023	[d]1.046	[d]1.049	.9965	1.049	.919	.130	61.88
7	1.060	1.044	.973	.894	.825	.762	.9263	1.060	.762	.298	60.10
8	.760	.737	.711	.699	.699	.715	.7202	.760	.699	.061	54.87
9	.737	.750	.749	.706	.644	.505	.6818	.750	.505	.245	53.91
10	.409	.195	.058	.163	.233	.288	**.2243**	.409	**.058**	.351	**42.27**
11	.300	.394	.425	[d].463	.465	.500	.4245	.500	.300	.200	47.35
12	.573	.595	.591	.598	.634	.729	.6200	.729	.573	.156	52.33
13	.767	.821	.817	.836	.854	.884	.8297	.884	.767	.117	57.67
14	.882	.881	.857	.858	.872	.849	.8665	.882	.849	.033	58.58
15	.822	.938	.934	.947	.931	.877	.9082	.947	.822	.125	59.65
16	.900	.873	.831	.832	.857	.902	.8658	.902	.831	.071	58.58
17	.955	1.007	1.060	1.116	1.169	1.157	1.0773	1.169	.955	.214	63.94
18	1.158	1.165	1.147	1.161	1.171	1.148	1.1583	1.171	1.147	.024	66.00
19	1.188	1.187	1.168	1.149	1.108	1.063	1.1438	1.188	1.063	.125	65.64
20	1.019	.985	.949	.971	.932	.941	.9662	1.019	.932	.087	61.12
21	.986	.988	.946	.955	.889	.864	.9380	.988	.864	.124	60.41
22	.864	.837	.788	.762	.790	.785	.8043	.864	.762	.102	57.01
23	.759	.731	.708	.683	.665	.677	.7038	.759	.665	.094	54.47
24	.698	.689	.666	.640	.624	.615	.6553	.698	.615	.083	53.23
25	.630	.655	.661	.674	.678	.674	.6620	.678	.630	.048	53.40
26	.660	.652	.641	.625	.611	.575	.6273	.660	.575	.085	52.51
27	.542	.514	.475	.455	.466	.476	.4880	.542	.455	.087	48.98
28	.507	.549	.592	.632	.681	.691	.6087	.691	.507	.184	52.06
29	.707	.769	.787	.810	.826	.843	.7903	.843	.707	.136	56.65
30	.841	.793	.797	.754	.757	.719	.7768	.841	.719	.122	56.32
Means	.8040	**.8079**	.7976	.8023	.8019	**.7961**	.80164	.8655	.7278	.1378	---- ----
Means in millimeters, 700+	57.01	**57.11**	56.85	56.96	56.96	**56.80**	56.96	58.58	55.07	3.50	56.94

[a] By constant +.036 to include 7 p. m., 12th; subsequently by constant +.030.
[b] Mercurial barometer No. 229.
[c] 31.7 feet [9.66m] to include 7 p. m., September 12; subsequently 24.2 feet [7.38m].
[d] .100 has been subtracted from each reading, it being evident from aneroid that an error of a tenth had been made.

OCTOBER, 1881.

TABLE VIII.—*Atmospheric pressure (reduced to sea)*,[a] *October*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.	B.	Gravity correction.
28	0.070	30	0.074
29	0.072	31	0.077

Date.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700+
1	.704	.663	.601	.538	.477	.440	.5705	.704	.440	.264	51.06
2	.449	.478	.494	.517	.551	.536	.5042	.551	.449	.102	49.39
3	.545	.569	.559	.583	.548	.474	.5463	.583	.474	.109	50.45
4	.442	.412	.384	.364	.394	.392	**.3980**	.442	**.364**	.078	**46.69**
5	.410	.415	.428	.460	.501	.521	.4558	.521	.410	.111	48.17
6	.534	.535	.551	.554	.590	.622	.5643	.622	.534	.088	50.91
7	.676	.705	.707	.694	.659	.625	.6777	.707	.625	.082	53.80
8	.605	.577	.543	.551	.547	.521	.5573	.605	.521	.084	50.74
9	.551	.570	.592	.645	.690	.729	.6295	.729	.551	.178	52.59
10	.773	.808	.850	.866	.858	.849	.8340	.866	.773	.093	57.77
11	.858	.874	.910	.925	.943	.941	.9085	.943	.858	.085	59.65
12	.938	.946	.933	.920	.921	.923	.9302	.946	.920	.026	60.21
13	.941	.957	.966	.977	.995	1.003	.9732	1.003	.941	.062	61.30
14	1.021	.990	.969	.940	.857	.789	.9277	1.021	.789	.232	60.15
15	.754	.715	.677	.661	.626	.561	.6657	.754	.561	.193	53.50
16	.504	.534	.555	.549	.549	.599	.5483	.599	.504	.095	50.50
17	.660	.730	.768	.773	.767	.728	.7377	.773	.660	.113	55.33
18	.701	.700	.713	.774	.832	.871	.7652	.871	.700	.171	56.02
19	.930	.997	1.068	1.135	1.189	1.229	1.0913	1.229	.930	.299	64.30
20	1.255	1.178	1.092	1.025	1.000	1.021	1.0952	1.255	1.000	.255	64.40
21	1.047	1.083	1.165	1.172	1.176	1.303	1.1577	1.303	1.047	.256	66.00
22	1.372	1.443	1.434	1.460	1.479	1.484	**1.4453**	1.484	1.372	.112	**73.29**
23	1.505	1.462	1.425	1.383	1.359	1.339	1.4122	**1.505**	1.339	.166	72.45
24	1.282	1.280	1.242	1.250	1.236	1.265	1.2592	1.282	1.236	.046	68.57
25	1.327	1.345	1.352	1.354	1.335	1.327	1.3400	1.354	1.327	.027	70.62
26	1.369	1.369	1.363	1.354	1.354	1.358	1.3612	1.369	1.354	.015	71.16
27	1.399	1.421	1.442	1.435	1.403	1.350	1.4083	1.442	1.350	.092	72.35
28	1.302	1.264	1.198	1.173	1.136	1.099	1.1953	1.302	1.099	.203	66.94
29	1.082	1.061	1.016	.981	.927	.873	.9900	1.082	.873	.209	61.73
30	.832	.786	.728	.707	.702	.720	.7458	.832	.702	.130	55.53
31	.780	.816	.858	.947	[c]1.048	1.020	.9115	1.048	.780	.268	59.75
Means	.8886	**89.30**	.8898	.8925	.8919	**.8875**	.89055	.9589	.8220	.1369	....
Means in millimeters, 700+	59.17	**59.27**	59.19	59.24	59.24	**59.14**	59.19	60.95	57.46	3.48	59.20

[a] By constant +.030.

[b] Mercurial barometer No. 229.

[c] Substituted aneroid; mercurial evidently read a tenth low.

NOVEMBER, 1881.

TABLE IX.—*Atmospheric pressure (reduced to sea),*[a] *November*, 1881.

B.	Gravity correction.	B.	Gravity correction.
28	0.070	30	0.074
29	0.072	31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700+
1	1.163	1.170	1.137	1.109	1.101	1.092	1.1287	1.170	1.092	.078	65.26
2	1.122	1.145	1.135	1.126	1.085	1.073	1.1143	1.145	1.073	.072	64.88
3	1.062	1.033	1.009	.996	1.009	1.037	1.0243	1.062	.996	.066	62.59
4	1.042	1.008	.974	.944	.830	.718	.9193	1.042	.718	.324	59.93
5	.588	.466	.369	.377	.326	.287	.4022	.588	.287	.301	46.80
6	.361	.314	.267	.238	.255	.296	**.2885**	.361	.238	.123	**43.90**
7	.349	.399	.455	.481	.507	.549	.4567	.549	.349	.200	48.20
8	.563	.542	.548	.584	.665	.726	.6047	.726	.542	.184	51.96
9	.759	.786	.799	.807	.813	.824	.7980	.824	.759	.065	56.85
10	.847	.842	.830	.834	.848	.846	.8412	.848	.830	.018	57.95
11	.812	.846	.852	.920	.983	1.105	.9197	1.105	.812	.293	59.90
12	1.187	1.208	1.198	1.177	1.141	1.109	**1.1700**	**1.208**	1.109	.099	**66.30**
13	1.081	1.037	.976	.984	.984	.983	1.0075	1.081	.976	.105	62.19
14	.992	1.022	1.037	1.076	1.092	1.119	1.0563	1.119	.992	.127	63.41
15	1.109	1.109	1.076	1.019	.960	.915	1.0313	1.109	.915	.194	62.78
16	.881	.858	.823	.824	.869	.905	.8600	.905	.823	.082	58.43
17	.940	.939	.923	.893	.877	.856	.9047	.940	.856	.084	59.58
18	.829	.811	.775	.733	.676	.605	.7382	.829	.605	.224	55.33
19	.573	.547	.569	.561	.541	.504	.5492	.573	.504	.069	50.53
20	.484	.455	.392	.366	.427	.484	.4347	.484	.366	.118	47.64
21	.552	.612	.654	.680	.658	.588	.6240	.680	.552	.128	52.43
22	.519	.420	.337	.303	.269	.236	.3473	.519	**.236**	.283	45.40
23	.265	.352	.408	.494	.529	.575	.4372	.575	.265	.310	47.79
24	.633	.669	.688	.718	.745	.765	.7030	.765	.633	.132	54.45
25	.843	.833	.843	.856	.838	.816	.8382	.856	.816	.040	57.87
26	.794	.767	.741	.743	.741	.751	.7562	.794	.741	.053	55.79
27	.767	.786	.785	.798	.792	.771	.7832	.798	.767	.031	56.48
28	.770	.801	.711	.681	.673	.666	.7170	.801	.666	.135	54.80
29	.677	.692	.701	.708	.720	.727	.7042	.727	.677	.050	54.47
30	.731	.727	.709	.667	.559	.441	.6390	.731	.441	.290	52.82
Means	**.7765**	.7732	.7574	.7566	.7504	**.7456**	.75995	.8305	.6879	.1426	
Means in millimeters, 700+	**56.29**	56.22	55.82	55.82	55.64	**55.53**	55.89	57.67	54.06	3.61	55.89

[a] By constant +.030.

[b] Mercurial barometer No. 229.

DECEMBER, 1881.

TABLE X.—*Atmospheric pressure (reduced to sea)*[a], *December*, 1881.

B.	Gravity correction.
28	0.070
29	0.072

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1			.392				.329				.219			
2			.283				.314				.375			
3			.491				.482				.501			
4			.604				.632				.639			
5			.636				.635				.630			
6			.739				.749				.759			
7			.795				.804				.844			
8			.991				1.013				1.030			
9			.871				.830				.824			
10			.841				.853				.865			
11			.775				.698				.682			
12			.562				.492				.469			
13			.421				.395				.379			
14			.539				.559				.586			
15			.677				.710				.725			
16	.803	.793	.800	.801	.801	.796	.788	.778	.771	.762	.748	.742	.741	.735
17	.718	.726	.735	.743	.747	.747	.747	.748	.753	.750	.753	.752	.748	.756
18	.756	.760	.761	.763	.766	.768	.763	.761	.760	.775	.765	.773	.777	.775
19	.812	.815	.819	.827	.821	.824	.825	.806	.806	.813	.804	.795	.796	.782
20	.717	.706	.705	.704	.706	.713	.715	.709	.726	.712	.713	.710	.726	.728
21	.738	.745	.738	.743	.747	.721	.710	.702	.698	.674	.647	.628	.618	.593
22	.447	.443	.446	.443	.443	.460	.459	.450	.451	.456	.454	.464	.474	.479
23	.500	.494	.496	.475	.444	.428	.414	.396	.393	.377	.374	.363	.363	.374
24	.354	.358	.372	.387	.395	.403	.405	.398	.388	.397	.404	.420	.437	.454
25	.598	.611	.630	.634	.655	.646	.647	.653	.654	.664	.664	.674	.671	.671
26	.802	.809	.816	.827	.834	.835	.836	.846	.844	.850	.859	.852	.863	.879
27	.990	.999	1.010	1.061	1.034	1.032	1.043	1.043	1.060	1.073	1.087	1.084	1.095	1.109
28	1.168	1.159	1.167	1.165	1.168	1.148	1.159	1.127	1.107	1.096	1.089	1.075	1.070	1.076
29	1.040	1.030	1.025	1.018	1.016	1.008	1.008	.988	.953	.955	.936	.914	.896	.898
30	881	.883	.890	.887	.881	.890	.891	.884	.928	.926	.933	.939	.949	.961
31	1.052	1.059	1.058	1.063	1.055	1.039	1.024	1.003	.999	.977	.950	.919	.902	.876
Means (16–31)	.7735	.7744	.7793	**.7838**	.7821	.7786	.7771	.7683	.7682	.7661	.7613	**.7565**	.7579	.7591
Means (month)			.7124				.7074				**.7002**			
Means (16–31) in millimeters, 700+	56.24	56.24	56.37	**56.50**	56.45	56.37	56.32	56.09	56.09	56.04	55.92	**55.79**	55.84	55.87
Means (month) in millimeters, 700+			54.67				54.55				**54.37**			

[a] By constant +.030.

[b] Mercurial barometer No. 229.

DECEMBER, 1881.

TABLE X.—*Atmospheric pressure* (*reduced to sea*), *December*, 1881.

B.	Gravity correction.
28	0.072
29	0.074

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700+	Means 3.7 and 11 a. m., 3.7 11 p. m.	Means in *mm.*, 3.7 and 11 a. m., 3.7 and 11 p. m., 700+
.157	------	------	------	.160	------	------	------	.200	------	------	.392	**.157**	.235	------	**.2428**	**42.76**
.413	------	------	------	.461	------	------	------	.464	------	------	.464	.283	.181	------	.3850	46.37
.524	------	------	------	.549	------	------	------	.566	------	------	.566	.482	.084	------	.5188	49.77
.657	------	------	------	.647	------	------	------	.639	------	------	.657	.604	.053	------	.6363	52.74
.661	------	------	------	.682	------	------	------	.704	------	------	.704	.630	.074	------	.6580	53.30
.783	------	------	------	.780	------	------	------	.781	------	------	.783	.739	.044	------	.7652	56.02
.897	------	------	------	.928	------	------	------	.959	------	------	.959	.795	.164	------	.8714	58.71
1.023	------	------	------	1.001	------	------	------	.935	------	------	1.030	.935	.095	------	.9988	61.96
.823	------	------	------	.821	------	------	------	.815	------	------	.871	.815	.056	------	.8307	57.70
.874	------	------	------	.859	------	------	------	.827	------	------	.874	.827	.047	------	.8532	58.26
.703	------	------	------	.697	------	------	------	.625	------	------	.775	.625	.150	------	.6967	54.29
.424	------	------	------	.442	------	------	------	.431	------	------	.562	.424	.138	------	.4700	48.52
.425	------	------	------	.449	------	------	------	.503	------	------	.503	.379	.124	------	.4287	47.48
.606	------	------	------	.635	------	------	------	.651	------	------	.651	.539	.112	------	.5960	51.72
.763	------	------	------	.783	------	------	------	.786	------	------	.786	.677	.109	------	.7407	55.41
.730	.730	.733	.730	.727	.720	.723	.715	.720	.730	.7549	.803	.715	.088	55.77	.7522	55.69
.757	.763	.760	.755	.762	.754	.751	.752	.752	.750	.7491	.763	.718	.045	55.61	.7510	55.67
.780	.770	.791	.785	.788	.789	.806	.813	.806	.808	.7774	.813	.756	.057	56.32	.7772	56.32
.779	.773	.756	.744	.747	.733	.732	.726	.717	.714	.7819	.827	.714	.113	56.45	.7818	56.45
.735	.743	.758	.760	.758	.755	.760	.764	.755	.762	.7308	.764	.704	.060	55.16	.7302	55.13
.573	.563	.534	.513	.494	.469	.469	.459	.439	.431	.6102	.747	.431	.316	52.08	.6002	51.83
.482	.497	.508	.513	.513	.523	.527	.5[illegible]2	.513	.518	.4785	.527	.443	.084	48.72	.4778	48.72
.394	.402	.407	.410	.417	.414	.393	.388	.372	.359	**.4103**	.500	.359	.141	**47.00**	.4112	47.03
.468	.481	.512	.530	.546	.549	.556	.576	.585	.595	.4571	.595	.354	.241	48.20	.4633	48.35
.694	.717	.724	.732	.744	.749	.754	.7[illegible]1	.776	.779	.6876	.779	.598	.181	54.06	.6925	54.16
.891	.903	.913	.919	.930	.936	.957	.957	.973	.983	.8798	.983	.802	.181	58.94	.8842	59.04
1.119	1.132	1.149	1.164	1.169	1.183	1.175	1.175	1.173	1.178	**1.0974**	**1.183**	.990	.193	**64.45**	**1.1002**	**64.53**
1.062	1.069	1.080	1.048	*1.051	*1.051	*1.050	*1.043	*1.034	*1.040	1.0959	1.168	1.034	.134	64.42	1.0937	64.37
.891	.882	.923	.915	.904	.892	.902	.887	.877	.880	.9432	1.040	.877	.163	60.54	.9402	60.46
.983	.997	1.014	1.028	1.043	1.049	1.050	1.044	1.047	1.041	.9591	1.050	.881	.169	60.95	.9645	61.07
.838	.819	.786	.744	.726	.708	.682	.675	.660	.644	.8858	1.063	.644	.419	59.09	.8760	58.83
.7610	.7651	.7718	.7681	.7699	.7671	.7679	.7661	.7624	.7633	.76870	.7801	.6429	.1371	------	------	------
.7067	------	------	------	**.7168**	------	------	------	.7124	------	------	------	------	------	------	.70929	------
55.92	56.02	56.19	56.09	56.14	56.07	56.09	56.04	55.9[illegible]	55.97	56.12	56.40	52.92	3.48	56.11	------	------
54.55	------	------	------	**54.77**	------	------	------	54.67	------	------	------	------	------	------	54.60	54.60

* .050 has been added to original reading to correct obvious error.

JANUARY, 1882.

TABLE XI.—*Atmospheric pressure (reduced to sea)*,[a] *January*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.632	.630	.624	.618	.621	.620	.615	.614	.618	.616	.607	.614	.609	.629
2	.735	.740	.770	.784	.812	.822	.819	.863	.898	.903	.931	.937	.959	.965
3	1.152	1.169	1.183	1.195	1.213	1.217	1.225	1.229	1.216	1.226	1.228	1.222	1.221	1.208
4	1.021	1.007	.982	.966	.948	.924	.892	.869	.848	.824	.813	.794	.738	.730
5	.634	.639	.646	.656	.659	.667	.672	.672	.673	.679	.670	.672	.683	.691
6	.779	.788	.793	.824	.821	.827	.829	.836	.846	.829	.841	.841	.838	.852
7	.884	.884	.892	.897	.909	.907	.915	.910	.914	.918	.916	.918	.920	.933
8	.936	.935	.929	.928	.929	.913	.912	.897	.894	.890	.873	.863	.862	.863
9	.826	.830	.829	.835	.837	.838	.850	.848	.844	.839	.842	.835	.848	.863
10	.920	.939	.950	.958	.962	.968	.974	.983	.992	1.004	.999	1.016	1.015	1.015
11	1.035	1.043	1.038	1.038	1.027	1.027	1.027	1.025	1.016	1.005	1.001	.995	.985	.992
12	.852	.834	.803	.775	.768	.742	.724	.713	.694	.664	.657	.647	.642	.640
13	.625	.619	.617	.612	.612	.596	.589	.567	.570	.545	.527	.509	.491	.496
14	.305	.291	.275	.273	.267	.259	.254	.244	.272	.287	.302	.314	.327	.324
15	.475	.481	.483	.486	.495	.511	.527	.535	.537	.551	.565	.585	.600	.627
16	.881	.868	.850	.837	.813	.779	.726	.675	.602	.532	.434	.326	.212	.103
17	.167	.201	.246	.31[illegible]	.344	.375	.400	.426	.457	.481	.505	.535	.569	.604
18	.802	.784	.788	.791	.785	.766	.750	.716	.707	.663	.645	.643	.606	.581
19	.676	.698	.727	.745	.752	.759	.768	.788	.814	.822	.835	.844	.844	.871
20	.977	.977	.977	.968	.956	.954	.954	.941	.924	.910	.887	.882	.863	.854
21	.771	.775	.781	.787	.798	.799	.799	.839	.845	.860	.879	.881	.888	.916
22	.995	.999	1.002	1.002	.988	.981	.977	.950	.940	.917	.911	.893	.871	.844
23	.644	.639	.626	.619	.614	.614	.610	.614	.606	.596	.602	.602	.587	.593
24	.494	.476	.467	.445	.422	.397	.395	.380	.358	.337	.310	.293	.287	.274
25	.347	.380	.401	.412	.434	.459	.483	.504	.518	.554	.578	.605	.633	.653
26	.852	.860	.884	.894	.903	.904	.906	.906	.915	.910	.900	.903	.893	.896
27	.817	.817	.827	.830	.829	.820	.829	.828	.826	.823	.831	.829	.830	.845
28	.738	.728	.706	.693	.670	.641	.591	.572	.555	.523	.500	.469	.459	.448
29	.572	.580	.608	.617	.618	.627	.641	.645	.653	.652	.655	.667	.648	.649
30	.345	.287	.269	.232	.198	.181	.198	.214	.253	.280	.331	.354	.371	.379
31	.475	.479	.488	.494	.513	.516	.510	.500	.503	.502	.509	.492	.486	.492
Means	.7214	.7218	.7245	.7233	**.7264**	.7229	.7213	.7224	.7196	.7143	.7124	.7090	**.7027**	.7042
Means in millimeters, 700 +	54.90	54.92	54.97	54.95	**55.02**	54.95	54.90	54.92	54.87	54.72	54.67	54.60	**54.45**	54.47

[a] By constant +.030. [b] Mercurial barometer No. 229.

JANUARY, 1882.

TABLE XI.—*Atmospheric pressure (reduced to sea), January, 1882.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700+	Date.
.640	.669	.691	.665	.683	.704	.713	.717	.707	.702	.6482	.717	.607	.110	53.04	1
.981	1.027	1.063	1.074	1.076	1.082	1.090	1.119	1.130	1.139	.9466	1.139	.735	.404	60.64	2
1.209	1.192	1.173	1.167	1.147	1.119	1.101	1.085	1.071	1.045	**1.1755**	**1.229**	1.045	.184	**66.45**	3
.718	.699	.674	.656	.636	.637	.640	.632	.627	.627	.7876	1.021	.627	.394	56.60	4
.704	.705	.717	.728	.733	.743	.742	.747	.758	.773	.6943	.773	.634	.139	54.21	5
.853	.866	.871	.871	.879	.873	.878	.873	.870	.875	.8439	.879	.779	.100	58.02	6
.939	.946	.961	.959	.959	.949	.949	.945	.939	.944	.9253	.961	.884	.077	60.08	7
.862	.853	.843	.841	.828	.828	.831	.829	.825	.820	.8743	.936	.820	.116	58.78	8
.863	.876	.885	.878	.889	.893	.900	.900	.903	.913	.8610	.913	.826	.087	58.46	9
1.028	1.033	1.042	1.034	1.039	1.042	1.047	1.050	1.048	1.044	1.0042	1.050	.920	.130	62.09	10
.995	.998	.985	.967	.961	.955	.944	.918	.897	.870	.9893	1.043	.870	.173	61.71	11
.638	.653	.656	.648	.654	.651	.650	.642	.630	.622	.6916	.852	.622	.230	54.17	12
.489	.472	.468	.448	.431	.416	.405	.382	.364	.332	.5076	.625	.332	.293	49.49	13
.356	.371	.394	.416	.427	.441	.448	.453	.457	.471	.3428	.471	.244	.227	45.30	14
.663	.689	.752	.776	.807	.836	.839	.852	.854	.869	.6414	.869	.475	.394	52.87	15
.047	.066	.035	*.026	.053	.066	.085	.111	.132	.134	.3914	.881	**.026**	.855	46.52	16
.630	.666	.693	.725	.750	.766	.775	.785	.790	.798	.5416	.798	.167	.631	50.35	17
.591	.580	.569	.578	.577	.593	.506	.604	.635	.659	.6670	.802	.569	.233	53.53	18
.884	.903	.914	.919	.933	.943	.956	.967	.965	.971	.8458	.991	.676	.295	58.07	19
.841	.828	.799	.795	.786	.785	.767	.775	.773	.763	.8723	.977	.763	.214	58.73	20
.934	.943	.964	.978	.975	.997	.998	.999	1.002	.992	.8912	1.002	.771	.231	59.22	21
.811	.804	.789	.771	.754	.738	.718	.692	.667	.650	.8610	1.002	.650	.352	58.46	22
.579	.572	.585	.591	.578	.567	.555	.538	.526	.496	.5897	.644	.496	.148	51.57	23
.279	.284	.279	.272	.275	.280	.299	.312	.330	.340	.3452	.494	.272	.222	45.35	24
.668	.707	.719	.728	.754	.774	.786	.808	.831	.834	.6071	.834	.347	.487	52.01	25
.893	.903	.888	.883	.872	.862	.857	.847	.839	.834	.8835	.915	.834	.081	59.04	26
.852	.844	.846	.843	.826	.815	.801	.798	.784	.763	.8230	.852	.763	.089	57.49	27
.450	.444	.454	.459	.470	.472	.500	.534	.544	.557	.5490	.738	.444	.294	50.53	28
.662	.656	.657	.622	.504	.557	.534	.476	.430	.370	.5996	.667	.370	.297	51.83	29
.402	.409	.409	.409	.397	.419	.416	.445	.448	.461	**.3378**	.461	.181	.280	**45.17**	30
.485	.508	.494	.479	.461	.439	.434	.413	.394	.351	.4557	.516	.351	.165	48.67	31
.7079	.7150	.7184	.7163	.7163	.7174	.7179	.7177	.7152	.7103	.7166	.840	.584	.256	----------	
54.57	54.75	54.82	54.77	54.77	54.80	54.82	54.82	54.75	54.62	54.80	57.92	51.42	6.50	54.79	

* .020 at 5.45 p. m.

FEBRUARY, 1882.

TABLE XII.—*Atmospheric pressure* (*reduced to sea*),[a] *February*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters.].

$H = 29{,}000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.316	.296	.271	.263	.234	.205	.186	.186	.186	.153	.167	.176	.190	.211
2	.383	.392	.406	.409	.415	.413	.424	.433	.445	.445	.450	.431	.454	.469
3	.470	.469	.473	.468	.470	.485	.486	.487	.505	.505	.510	.519	.530	.554
4	.728	.732	.749	.750	.753	.758	.780	.786	.800	.811	.827	.838	.858	.887
5	1.144	1.163	1.173	1.197	1.199	1.225	1.245	1.281	1.312	1.336	1.368	1.384	1.412	1.430
6	1.605	1.609	1.613	1.608	1.610	1.603	1.605	1.595	1.595	1.584	1.571	1.546	1.514	1.499
7	1.167	1.139	1.111	1.096	1.078	1.064	1.038	1.015	.995	.982	.967	.951	.938	.928
8	.712	.700	.677	.666	.653	.626	.613	.608	.614	.612	.612	.611	.621	.634
9	.642	.636	.632	.628	.620	.607	.596	.595	.585	.581	.592	.592	.600	.613
10	.733	.728	.732	.740	.735	.742	.741	.736	.743	.748	.743	.744	.746	.758
11	.820	.834	.842	.858	.866	.874	.883	.883	.903	.907	.916	.921	.920	.918
12	.924	.928	.931	.939	.940	.932	.920	.917	.912	.897	.901	.884	.887	.886
13	.866	.869	.869	.881	.887	.885	.888	.877	.890	.893	.900	.895	.903	.907
14	.969	.968	.964	.966	.962	.963	.979	.982	.987	.984	.981	.976	.981	.981
15	.857	.832	.826	.801	.779	.769	.749	.700	.671	.644	.606	.565	.528	.492
16	.417	.416	.420	.420	.424	.423	.421	.405	.399	.393	.380	.370	.358	.351
17	.295	.298	.305	.316	.319	.331	.337	.337	.346	.357	.361	.359	.382	.394
18	.387	.386	.383	.396	.398	.404	.396	.394	.394	.389	.398	.406	.421	.441
19	.611	.625	.641	.661	.672	.688	.705	.705	.734	.750	.754	.768	.780	.801
20	.805	.810	.807	.806	.796	.794	.780	.766	.765	.754	.750	.731	.724	.721
21	.745	.754	.760	.772	.790	.808	.827	.834	.858	.879	.900	.921	.944	.975
22	1.193	1.213	1.228	1.250	1.270	1.292	1.308	1.309	1.331	1.348	1.357	1.365	1.372	1.378
23	1.413	1.409	1.405	1.398	1.381	1.379	1.365	1.356	1.364	1.352	1.341	1.308	1.297	1.284
24	1.074	1.066	1.047	1.034	1.015	1.002	.979	.949	.937	.919	.881	.850	.822	.793
25	.585	.569	.570	.566	.566	.579	.586	.587	.594	.590	.582	.570	.556	.548
26	.418	.415	.402	.387	.383	.374	.371	.361	.348	.343	.332	.327	.325	.316
27	.294	.298	.306	.320	.341	.356	.368	.368	.369	.371	.366	.363	.353	.352
28	.412	.430	.447	.458	.467	.481	.495	.512	.517	.521	.531	.550	.551	.550
Means	.7494	.7494	.7496	.7519	.7508	.7522	.7525	.7488	.7535	.7517	.7516	**.7472**	.7488	.7525
Means in millimeters, 700 +	55.61	55.61	55.64	55.69	55.67	55.69	55.69	55.61	55.74	55.69	55.69	**55.55**	55.61	55.69

[a] By constant +.030. [b] Mercurial barometer No. 229.

FEBRUARY, 1882.

TABLE XII.—*Atmospheric pressure (reduced to sea), February, 1882.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700+	Date.
.236	.254	.284	.293	.302	.320	.341	.346	.352	.362	**.2554**	.362	**.153**	.209	**43.07**	1
.486	.482	.485	.490	.480	.477	.475	.473	.478	.479	.4489	.490	.383	.107	47.99	2
.571	.589	.622	.624	.636	.643	.668	.681	.702	.704	.5571	.704	.468	.236	50.74	3
.902	.916	.946	.962	.978	1.011	1.042	1.069	1.092	1.123	.8791	1.123	.728	.395	58.91	4
1.460	1.484	1.505	1.520	1.540	1.559	1.571	1.581	1.592	1.604	1.3869	1.604	1.144	.460	71.82	5
1.476	1.466	1.430	1.396	1.373	1.346	1.303	1.268	1.227	1.209	**1.4854**	**1.613**	1.209	.404	**74.31**	6
.920	.905	.882	.881	.854	.842	.814	.795	.773	.742	.9532	1.167	.742	.425	60.80	7
.637	.637	.650	.646	.642	.657	.658	.649	.648	.645	.6428	.712	.608	.104	52.92	8
.632	.647	.662	.675	.691	.699	.707	.714	.718	.731	.6414	.731	.581	.150	52.87	9
.763	.768	.767	.777	.778	.787	.793	.806	.[illegible]06	.819	.7597	.819	.728	.091	55.89	10
.931	.934	.936	.936	.943	.951	.951	.948	.945	.924	.9060	.951	.820	.131	59.60	11
.896	.885	.883	.888	.883	.880	.879	.878	.880	.863	.9005	.940	.863	.077	59.48	12
.918	.945	.926	.931	.947	.947	.947	.951	.946	.960	.9095	.960	.866	.094	59.70	13
.959	.963	.957	.951	.946	.932	.921	.914	.899	.882	.9569	.987	.882	.105	60.90	14
.477	.453	.442	.422	.409	.404	.407	.392	.404	.421	.5854	.857	.392	.465	51.45	15
.340	.338	.331	.337	.317	.310	.304	.297	.297	.291	.3649	.424	.291	.133	45.86	16
.402	.401	.411	.409	.397	.404	.400	.390	.395	.392	.3641	.411	.295	.116	45.83	17
.455	.469	.479	.496	.501	.519	.546	.556	.571	.586	.4488	.586	.383	.203	47.99	18
.796	.806	.807	.815	.813	.815	.813	.808	.818	.813	.7500	.818	.611	.207	55.64	19
.692	.686	.684	.687	.694	.704	.709	.716	.722	.722	.7427	.810	.684	.126	55.46	20
1.006	1.029	1.065	1.081	1.095	1.113	1.128	1.136	1.153	1.170	.9476	1.170	.745	.425	60.66	21
1.383	1.398	1.398	1.410	1.409	1.409	1.416	1.415	1.410	1.408	1.3446	1.416	1.193	.223	70.75	22
1.276	1.259	1.237	1.219	1.185	1.167	1.15[illegible]	1.132	1.111	1.078	1.2863	1.413	1.078	.335	69.25	23
.773	.746	.728	.695	.659	.626	.606	.593	.591	.586	.8321	1.074	.586	.488	57.72	24
.528	.507	.490	.476	.472	.464	.459	.459	.441	.429	.5322	.594	.429	.165	50.10	25
.309	.309	.301	.297	.297	.294	.293	.294	.287	.291	.3364	.418	.287	.131	45.12	26
.359	.358	.362	.365	.366	.372	.383	.386	.392	.393	.3567	.393	.294	.099	45.66	27
.584	.585	.583	.619	.606	.614	.617	.632	.636	.647	.5435	.647	.412	.235	50.40	28
.7560	.7578	.7590	.7606	.7576	.7595	**.7609**	.7600	.7602	.7598	.7542	.864	.638	.226	----------	
55.79	55.84	55.87	55.92	55.84	55.89	**55.92**	55.89	55.89	55.89	55.74	58.53	52.79	5.73	55.75	

MARCH, 1882.

TABLE XIII.—*Atmospheric pressure (reduced to sea)*,[a] *March*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.656	.679	.675	.701	.695	.707	.707	.720	.715	.717	.695	.709	.698	.705
2	.534	.505	.476	.430	.397	.355	.314	.275	.242	.200	.161	.117	.079	.039
3	.045	.061	.094	.121	.129	.142	.178	.212	.251	.289	.330	.357	.392	.423
4	.729	.744	.766	.779	.800	.819	.825	.828	.827	.813	.790	.768	.739	.729
5	.811	.830	.865	.887	.918	.934	.941	.949	.967	.981	.968	.954	.945	.926
6	.732	.715	.703	.701	.722	.737	.751	.765	.784	.778	.793	.794	.812	.827
7	.928	.931	.939	.952	.961	.960	.955	.947	.955	.949	.933	.914	.881	.877
8	.726	.724	.713	.710	.704	.704	.700	.701	.707	.702	.684	.675	.670	.674
9	.647	.649	.453	.657	.654	.653	.644	.628	.619	.614	.602	.592	.580	.582
10	.544	.546	.534	.520	.529	.534	.540	.532	.532	.519	.525	.532	.528	.521
11	.489	.491	.473	.456	.444	.421	.402	.379	.379	.366	.354	.335	.327	.329
12	.400	.409	.416	.424	.440	.447	.463	.469	.481	.485	.488	.500	.511	.522
13	.602	.613	.622	.630	.634	.643	.655	.658	.680	.680	.689	.697	.710	.710
14	.772	.777	.783	.787	.787	.788	.790	.794	.803	.800	.798	.807	.814	.821
15	.865	.865	.854	.850	.848	.847	.849	.848	.854	.846	.841	.848	.848	.849
16	.986	.998	1.015	1.039	1.062	1.072	1.095	1.111	1.128	1.146	1.171	1.182	1.202	1.209
17	1.384	1.399	1.415	1.429	1.442	1.464	1.468	1.479	1.511	1.521	1.529	1.545	1.541	1.535
18	1.592	1.587	1.581	1.578	1.575	1.564	1.551	1.534	1.525	1.504	1.484	1.466	1.451	1.438
19	1.396	1.407	1.408	1.409	1.417	1.427	1.434	1.428	1.430	1.430	1.429	1.433	1.430	1.426
20	1.384	1.378	1.355	1.352	1.339	1.311	1.302	1.293	1.272	1.244	1.216	1.194	1.162	1.159
21	.973	.956	.943	.926	.920	.892	.891	.866	.845	.829	.799	.779	.754	.741
22	.538	.522	.511	.490	.476	.456	.433	.420	.372	.357	.329	.310	.285	.259
23	.209	.225	.232	.247	.259	.285	.290	.311	.323	.340	.345	.363	.374	.382
24	.493	.499	.508	.512	.522	.529	.534	.539	.529	.536	.542	.550	.556	.567
25	.672	.693	.704	.719	.727	.735	.746	.754	.774	.771	.774	.785	.807	.816
26	.842	.839	.834	.830	.825	.819	.811	.799	.782	.777	.766	.748	.736	.713
27	.711	.721	.722	.725	.724	.734	.736	.733	.734	.719	.717	.712	.706	.695
28	.695	.685	.683	.675	.673	.663	.664	.657	.643	.638	.618	.611	.603	.583
29	.452	.434	.410	.380	.345	.311	.287	.245	.216	.193	.166	.131	.115	.097
30	.001	.076	.118	.154	.191	.244	.283	.349	.387	.429	.451	.505	.528	.567
31	.808	.835	.845	.856	.878	.892	.912	.920	.921	.930	.926	.937	.930	.929
Means	**72.95**	.7353	.7371	.7395	.7431	.7448	.7468	.7465	**.7480**	.7453	.7391	.7371	.7327	.7313
Means in millimeters 700+	**55.13**	55.28	55.31	55.38	55.46	55.51	55.56	55.53	**55.58**	55.51	55.36	55.31	55.21	55.16

[a] By constant +.030. [b] Mercurial barometer No. 229.

MARCH, 1882.

TABLE XIII.—*Atmospheric pressure (reduced to sea), March, 1882.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700+	Date.
.707	.702	.694	.690	.677	.656	.646	.629	.602	.580	.6817	.720	.580	.140	53.91	1
.024	.015	.015	.006	(28.993)	.000	.012	.013	.021	.037	.1775	.534	28.993	.541	41.10	2
.456	.490	.527	.553	.585	.608	.644	.664	.682	.701	.3723	.701	.045	.656	46.03	3
.709	.707	.703	.712	.713	.715	.720	.743	.770	.795	.7601	.828	.703	.125	55.89	4
.921	.906	.891	.874	.860	.844	.821	.803	.775	.750	.8884	.981	.750	.231	59.14	5
.837	.836	.858	.861	.867	.873	.888	.902	.908	.923	.8069	.923	.701	.222	57.09	6
.859	.847	.816	.821	.800	.788	.771	.758	.749	.735	.8761	.961	.735	.226	58.83	7
.671	.665	.666	.666	.666	.656	.663	.657	.651	.644	.6833	.726	.644	.082	53.94	8
.587	.571	.563	.568	.559	.539	.529	.520	.533	.540	.5951	.657	.520	.137	51.70	9
.523	.526	.518	.526	.527	.523	.521	.508	.511	.501	.5259	.546	.501	.045	49.94	10
.334	.333	.343	.351	.351	.359	.373	.382	.391	.395	.3857	.491	.327	.164	46.39	11
.528	.542	.549	.559	.578	.581	.592	.579	.589	.598	.5062	.598	.400	.198	49.44	12
.729	.739	.751	.765	.761	.761	.765	.769	.780	.781	.7010	.781	.602	.179	54.40	13
.818	.820	.837	.840	.839	.852	.842	.852	.855	.865	.8142	.865	.772	.093	57.26	14
.867	.865	.884	.889	.890	.920	.932	.945	.956	.975	.8765	.975	.841	.134	58.83	15
1.239	1.249	1.256	1.279	1.300	1.326	1.341	1.369	1.369	1.383	1.1886	1.383	.986	.397	66.79	16
1.561	1.589	1.585	1.591	1.598	1.597	1.613	1.607	1.606	1.601	**1.5262**	**1.613**	1.384	.229	**75.34**	17
1.431	1.420	1.414	1.407	1.403	1.389	1.392	1.388	1.382	1.382	1.4776	1.592	1.382	.210	74.12	18
1.434	1.435	1.436	1.430	1.422	1.420	1.418	1.410	1.407	1.393	1.4212	1.436	1.393	.043	72.68	19
1.145	1.121	1.111	1.093	1.082	1.059	1.049	1.029	1.012	.997	1.1941	1.384	\.997	.387	66.91	20
.721	.694	.675	.660	.640	.612	.595	.577	.565	.546	.7666	.973	.546	.427	56.07	21
.253	.246	.226	.224	.217	.199	.193	.183	.197	.702	.3291	.538	.183	.355	44.94	22
.408	.418	.428	.432	.439	.448	.456	.461	.466	.479	.3592	.479	.209	.270	45.71	23
.580	.585	.591	.598	.601	.614	.637	.641	.651	.669	.5664	.669	.493	.176	50.96	24
.814	.817	.827	.819	.824	.822	.832	.837	.838	.842	.7812	.842	.672	.170	56.43	25
.703	.692	.686	.681	.667	.677	.671	679	.688	.694	.7483	.842	.667	.175	55.58	26
.704	.707	.694	.702	.707	.702	.707	.694	.704	.702	.7130	.736	.694	.042	54.70	27
.582	.580	.570	.567	.562	.552	.542	.527	.512	.479	.6068	.695	.479	.216	52.01	28
.083	.062	.043	.015	.018	.010	.011	(28.995)	(28.988)	(28.993)	**.1667**	.452	**(28.988)**	.464	**40.83**	29
.592	.627	.652	.693	.710	.723	.739	.759	.774	.790	.4726	.790	.001	.789	48.60	30
.926	.933	.946	.944	.946	.956	.949	.978	.982	.996	.9198	.996	.808	.188	59.95	31
.7337	.7335	.7340	.7360	.7355	.7349	.7375	.7374	.7392	.7409	.7382	.862	.613	.249	---------	
55.23	55.23	55.23	55.28	55.28	55.26	55.33	55.31	55.31	55.26	55.33	58.48	52.16	6.32	55.34	

APRIL, 1882.

TABLE XIV.—*Atmospheric pressure (reduced to sea)*[a], *April*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.987	.988	.977	.969	.949	.938	.913	.881	.835	.802	.782	.750	.750	.753
2	.782	.781	.775	.786	.804	.820	.845	.861	.872	.878	.901	.903	.933	.962
3	1.089	1.085	1.092	1.078	1.084	1.082	1.080	1.088	1.082	1.069	1.070	1.061	1.050	1.045
4	.968	.960	.948	.961	.939	.925	.899	.898	.898	.872	.859	.841	.827	.790
5	.725	.730	.754	.788	.826	.841	.846	.854	.850	.863	.863	.870	.874	.878
6	.831	.837	.842	.848	.842	.848	.838	.843	.841	.836	.832	.836	.835	.838
7	.877	.884	.891	.892	.892	.892	.903	.903	.899	.909	.917	.916	.926	.939
8	1.095	1.120	1.130	1.145	1.150	1.159	1.177	1.188	1.210	1.239	1.262	1.287	1.320	1.350
9	1.745	1.771	1.807	1.838	1.874	1.902	1.931	1.933	1.970	1.981	1.982	1.989	1.981	2.000
10	1.854	1.837	1.022	1.818	1.793	1.764	1.742	1.716	1.712	1.681	1.652	1.618	1.608	1.594
11	1.424	1.398	1.410	1.414	1.423	1.427	1.434	1.440	1.451	1.463	1.469	1.469	1.473	1.470
12	1.506	1.518	1.524	1.541	1.536	1.541	1.539	1.541	1.542	1.552	1.549	1.537	1.520	1.513
13	1.489	1.489	1.495	1.492	1.498	1.501	1.512	1.511	1.507	1.506	1.506	1.503	1.497	1.486
14	1.242	1.216	1.201	1.190	1.177	1.149	1.139	1.118	1.101	1.089	1.068	1.073	1.070	1.036
15	.921	.905	.890	.870	.866	.848	.839	.817	.797	.789	.782	.769	.755	.735
16	.697	.705	.711	.717	.711	.708	.704	.707	.699	.695	.695	.686	.682	.674
17	.642	.646	.644	.650	.648	.652	.652	.667	.682	.681	.699	.704	.721	.731
18	.875	.882	.894	.907	.919	.922	.934	.950	.963	.963	.966	.966	.963	.969
19	1.044	1.060	1.072	1.081	1.097	1.109	1.119	1.135	1.144	1.159	1.169	1.181	1.193	1.219
20	1.347	1.359	1.372	1.382	1.390	1.399	1.398	1.398	1.407	1.413	1.413	1.405	1.410	1.416
21	1.422	1.414	1.407	1.400	1.398	1.390	1.365	1.344	1.347	1.302	1.280	1.257	1.234	1.207
22	.941	.969	.963	.944	.928	.899	.912	.899	.912	.925	.927	.932	.933	.941
23	1.178	1.218	1.264	1.307	1.332	1.368	1.396	1.427	1.453	1.472	1.492	1.516	1.528	1.533
24	1.319	1.285	1.260	1.222	1.185	1.159	1.130	1.095	1.071	1.046	1.037	1.015	1.002	.986
25	.992	1.015	1.034	1.058	1.083	1.094	1.106	1.130	1.152	1.177	1.184	1.207	1.222	1.237
26	1.292	1.299	1.301	1.294	1.297	1.293	1.292	1.292	1.314	1.307	1.291	1.289	1.291	1.294
27	1.292	1.296	1.306	1.305	1.304	1.309	1.307	1.312	1.315	1.319	1.310	1.308	1.301	1.298
28	1.253	1.248	1.241	1.234	1.233	1.236	1.236	1.232	1.231	1.232	1.220	1.213	1.203	1.201
29	1.213	1.212	1.209	1.217	1.220	1.232	1.240	1.236	1.253	1.241	1.246	1.249	1.236	1.246
30	1.203	1.201	1.184	1.173	1.172	1.175	1.179	1.179	1.177	1.184	1.184	1.186	1.184	1.189
Means	**1.1415**	1.1443	1.1473	1.1507	1.1523	1.1527	1.1536	1.1532	**1.1562**	1.1548	1.1536	1.1512	1.1507	1.1510
Means in millimeters 700+	**65.59**	65.64	65.72	65.83	65.85	65.88	65.90	65.88	**65.95**	65.93	65.90	65.83	65.83	65.83

[a] By constant +.030.

[b] Mercurial barometer No. 229.

B.	Gravity correction.
30	0.074
31	0.077

APRIL, 1882.

TABLE XIV.—*Atmospheric pressure (reduced to sea), April, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700+	Date.
.747	.746	.747	.756	.773	.785	.770	.768	.768	.776	.8297	.988	.746	.242	57.67	1
.983	1.004	1.030	1.040	1.059	1.067	1.078	1.076	1.069	1.091	.9333	1.091	.775	.316	60.29	2
1.043	1.039	1.033	1.032	1.018	1.010	.991	.986	.987	.969	1.0485	1.092	.969	.123	63.20	3
.785	.778	.748	.745	.737	.732	.730	.731	.710	.706	.8328	.968	.706	.262	57.75	4
.878	.886	.875	.866	.861	.856	.847	.845	.839	.833	.8395	.886	.725	.161	57.92	5
.841	.840	.856	.856	.855	.863	.863	.866	.863	.868	.8466	.868	.831	.037	58.10	6
.959	.972	.988	1.004	1.015	1.035	1.046	1.058	1.072	1.093	.9534	1.093	.877	.216	60.80	7
1.387	1.421	1.459	1.502	1.537	1.578	1.611	1.646	1.689	1.711	1.3489	1.711	1.095	.616	70.85	8
1.996	1.994	1.983	1.967	1.960	1.952	1.928	1.919	1.892	1.881	**1.9240**	**2.000**	1.745	.255	**85.45**	9
1.573	1.566	1.543	1.519	1.505	1.492	1.487	1.461	1.453	1.437	1.6353	1.854	1.437	.417	78.12	10
1.457	1.490	1.487	1.496	1.507	1.506	1.504	1.491	1.499	1.503	1.4627	1.507	1.398	.109	73.75	11
1.517	1.509	1.508	1.511	1.506	1.499	1.496	1.489	1.482	1.483	1.5191	1.552	1.482	.070	75.17	12
1.471	1.456	1.449	1.428	1.403	1.378	1.359	1.334	1.306	1.283	1.4525	1.512	1.283	.229	73.47	13
1.032	1.012	1.012	.996	.984	.975	.960	.949	.947	.937	1.0697	1.242	.937	.305	63.76	14
.738	.729	.714	.704	.703	.702	.694	.690	.693	.695	.7769	.921	.690	.231	56.32	15
.663	.657	.661	.656	.648	.646	.650	.636	.638	.632	**.6782**	.717	**.632**	.085	**53.80**	16
.735	.752	.748	.761	.782	.800	.808	.819	.840	.844	.7212	.844	.642	.202	54.90	17
.976	.982	.981	.997	.997	1.000	1.010	1.019	1.029	1.029	.9622	1.029	.875	.154	61.02	18
1.212	1.242	1.249	1.269	1.287	1.298	1.315	1.320	1.327	1.328	1.1929	1.328	1.044	.284	66.89	19
1.435	1.439	1.440	1.438	1.430	1.425	1.427	1.421	1.412	1.412	1.4078	1.440	1.347	.093	72.35	20
1.160	1.143	1.101	1.078	1.049	1.034	1.008	.984	.960	.954	1.2182	1.422	.954	.468	67.52	21
.951	.970	.992	.996	1.009	1.014	1.038	1.066	1.095	1.137	.9705	1.137	.899	.238	61.22	22
1.543	1.542	1.537	1.523	1.508	1.489	1.458	1.415	1.391	1.357	1.4270	1.543	1.178	.365	72.83	23
.979	.976	.963	.952	.956	.952	.951	.955	.963	.975	1.0598	1.319	.951	.368	63.51	24
1.252	1.257	1.269	1.281	1.290	1.282	1.290	1.295	1.296	1.299	1.1876	1.299	.992	.307	66.76	25
1.291	1.280	1.278	1.284	1.284	1.286	1.289	1.288	1.291	1.290	1.2920	1.314	1.278	.036	69.40	26
1.294	1.287	1.283	1.283	1.282	1.279	1.278	1.266	1.261	1.255	1.2938	1.319	1.255	.064	69.45	27
1.198	1.206	1.197	1.199	1.195	1.201	1.205	1.210	1.203	1.204	1.2180	1.253	1.195	.058	67.52	28
1.246	1.238	1.236	1.242	1.235	1.224	1.222	1.212	1.211	1.206	1.2301	1.253	1.206	.047	67.83	29
1.178	1.182	1.182	1.187	1.188	1.184	1.185	1.185	1.196	1.202	1.1850	1.203	1.172	.031	66.69	30
1.1507	1.1532	1.15[illegible]6	1.1523	1.1521	1.1515	1.1499	1.1467	1.1461	1.1463	1.1506	1.224	1.010	.213	----------	
65.83	65.88	65.85	65.85	65.85	65.85	65.80	65.72	65.69	65.69	65.83	67.67	62.24	5.41	65.81	

MAY, 1882.

TABLE XV.—*Atmospheric pressure (reduced to sea)*,[a] *May*, 1882.

B.	Gravity correction.
28	0.070
29	0.072

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29,000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	1.207	1.217	1.219	1.130	1.240	1.243	1.255	1.253	1.248	1.259	1.248	1.244	1.248	1.245
2	1.185	1.184	1.183	1.182	1.177	1.170	1.170	1.165	1.151	1.141	1.148	1.135	1.130	1.133
3	1.109	1.132	1.134	1.148	1.148	1.153	1.167	1.184	1.200	1.211	1.222	1.239	1.250	1.261
4	1.343	1.365	1.373	1.378	1.378	1.382	1.368	1.360	1.357	1.359	1.353	1.346	1.343	1.347
5	1.290	1.280	1.278	1.279	1.273	1.274	1.263	1.258	1.250	1.241	1.237	1.224	1.216	1.213
6	1.162	1.157	1.153	1.150	1.156	1.157	1.154	1.156	1.154	1.149	1.151	1.139	1.132	1.124
7	1.060	1.057	1.048	1.046	1.046	1.036	1.017	1.012	1.008	1.008	1.004	1.002	1.001	1.009
8	1.069	1.072	1.083	1.097	1.116	1.110	1.115	1.136	1.156	1.163	1.162	1.178	1.185	1.203
9	1.313	1.315	1.310	1.323	1.326	1.327	1.330	1.321	1.324	1.315	1.311	1.311	1.305	1.299
10	1.323	1.324	1.318	1.317	1.317	1.334	1.329	1.327	1.330	1.323	1.320	1.311	1.308	1.308
11	1.324	1.325	1.322	1.322	1.321	1.315	1.311	1.309	1.305	1.302	1.291	1.286	1.278	1.278
12	1.279	1.271	1.267	1.267	1.267	1.264	1.266	1.257	1.259	1.257	1.245	1.243	1.233	1.223
13	1.129	1.117	1.107	1.098	1.088	1.077	1.066	1.051	1.043	1.033	1.021	1.005	.994	.986
14	1.035	1.034	1.034	1.034	1.033	1.030	1.016	1.008	.983	.962	.945	.924	.903	.895
15	.737	.736	.731	.728	.728	.730	.724	.723	.725	.719	.716	.699	.693	.685
16	.656	.669	.680	.685	.697	.716	.727	.745	.769	.777	.786	.791	.807	.812
17	.792	.792	.790	.787	.789	.773	.777	.774	.781	.776	.770	.760	.759	.757
18	.759	.760	.764	.767	.770	.771	.770	.763	.770	.766	.763	.759	.761	.762
19	.782	.792	.799	.805	.810	.813	.819	.839	.859	.869	.878	.889	.905	.914
20	.974	.978	.979	.978	.979	.986	.989	.994	.995	1.000	.994	1.001	1.010	1.015
21	1.086	1.091	1.092	1.093	1.096	1.098	1.101	1.099	1.110	1.104	1.096	1.093	1.089	1.081
22	1.025	1.043	1.064	1.086	1.113	1.131	1.156	1.174	1.198	1.220	1.241	1.261	1.278	1.280
23	1.324	1.329	1.334	1.339	1.342	1.351	1.358	1.364	1.382	1.396	1.401	1.416	1.427	1.439
24	1.519	1.513	1.519	1.517	1.510	1.504	1.497	1.494	1.493	1.481	1.472	1.459	1.447	1.435
25	1.329	1.325	1.322	1.317	1.310	1.318	1.311	1.308	1.312	1.315	1.312	1.306	1.304	1.303
26	1.250	1.255	1.249	1.243	1.240	1.238	1.223	1.213	1.215	1.204	1.193	1.182	1.177	1.172
27	1.152	1.152	1.150	1.155	1.162	1.164	1.167	1.164	1.159	1.160	1.156	1.160	1.155	1.156
28	1.202	1.203	1.203	1.216	1.225	1.223	1.220	1.221	1.227	1.220	1.218	1.208	1.198	1.184
29	1.033	1.030	1.032	1.031	1.025	1.016	1.014	1.010	1.004	.984	.976	.972	.961	.957
30	.955	.970	.977	.990	1.004	1.021	1.036	1.062	1.075	1.088	1.111	1.126	1.143	1.168
31	1.351	1.362	1.371	1.383	1.396	1,397	1.414	1.422	1.430	1.421	1.422	1.419	1.416	1.418
Means	1.1211	1.1241	1.1253	1.1287	1.1317	1.1330	1.1332	1.1344	1.1378	1.1362	1.1343	1.1319	1.1308	1.1310
Means in millimeters, 700+	65.06	65.13	65.16	65.26	65.34	65.37	65.37	65.39	65.49	65.44	65.39	65.34	65.32	65.32

[a] By constant +.030.

[b] Mercurial barometer No. 229.

B.	Gravity correction.
30	0.074
31	0.077

MAY, 1882.

TABLE XV.—*Atmospheric pressure (reduced to sea), May, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700+	Date.
1.244	1.236	1.225	1.210	1.199	1.199	1.201	1.190	1.193	1.191	1.2268	1.259	1.190	.069	67.75	1
1.117	1.132	1.112	1.115	1.112	1.143	1.116	1.118	1.117	1.105	1.1425	1.185	1.105	.080	65.59	2
1.266	1.267	1.270	1.285	1.283	1.299	1.304	1.308	1.325	1.343	1.2295	1.343	1.109	.234	67.83	3
1.345	1.349	1.351	1.342	1.344	1.344	1.337	1.320	1.306	1.301	1.3496	1.382	1.301	.081	70.88	4
1.209	1.200	1.194	1.185	1.178	1.173	1.168	1.162	1.163	1.167	1.2235	1.290	1.162	.128	67.67	5
1.123	1.119	1.113	1.099	1.098	1.091	1.082	1.083	1.069	1.063	1.1262	1.162	1.063	.099	65.18	6
1.014	1.023	1.024	1.037	1.035	1.041	1.044	1.048	1.054	1.062	1.0308	1.062	1.001	.061	62.78	7
1.213	1.224	1.238	1.252	1.270	1.281	1.291	1.295	1.308	1.314	1.1888	1.314	1.069	.245	66.79	8
1.304	1.307	1.306	1.301	1.307	1.306	1.311	1.314	1.323	1.320	1.3137	1.330	1.299	.031	69.96	9
1.302	1.303	1.307	1.296	1.310	1.320	1.317	1.314	1.316	1.323	1.3165	1.334	1.296	.038	70.01	10
1.286	1.293	1.293	1.298	1.293	1.296	1.291	1.284	1.278	1.278	1.2991	1.325	1.278	.047	69.58	11
1.217	1.210	1.199	1.191	1.186	1.180	1.171	1.157	1.152	1.142	1.2251	1.279	1.142	.137	67.70	12
.988	.989	.983	.996	1.000	.998	1.009	1.012	1.026	1.032	1.0353	1.129	.983	.146	62.88	13
.871	.850	.835	.821	.794	.782	.777	.772	.578	.753	.9104	1.035	.753	.282	59.70	14
.676	.669	.669	.663	.656	.660	.652	.640	.650	.653	**.6942**	.737	**.640**	.097	**54.21**	15
.819	.816	:810	.805	.806	.804	.803	.795	.804	.803	.7659	.819	.656	.163	56.04	16
.755	.754	.759	.752	.758	.750	.752	.755	.761	.761	.7681	.792	.750	.042	56.09	17
.758	.767	.762	.762	.764	.764	.775	.772	.779	.782	.7662	.782	.758	.024	56.04	18
.925	.931	.932	.954	.962	.969	.964	.972	.967	.974	.8885	.974	.782	.192	59.14	19
1.026	1.046	1.062	1.063	1.067	1.073	1.069	1.069	1.076	1.083	1.0211	1.083	.974	.109	62.52	20
1.077	1.067	1.067	1.035	1.039	1.035	1.031	1.022	1.028	1.025	1.0731	1.110	1.022	.088	63.84	21
1.295	1.304	1.305	1.308	1.310	1.308	1.306	1.313	3.315	1.320	1.2231	1.320	1.025	.295	67.65	22
1.448	1.456	1.464	1.479	1.491	1.493	1.504	1.506	1.519	1.522	1.4202	**1.522**	1.324	.198	72.65	23
1.431	1.422	1.408	1.395	1.384	1.376	1.361	1.348	1.342	1.341	**1.4445**	1.519	1.341	.178	**73.26**	24
1.299	1.298	1.302	1.295	1.287	1.283	1.283	1.276	1.269	1.261	1.3019	1.329	1.261	.068	69.66	25
1.170	1.165	1.163	1.163	1.154	1.154	1.149	1.145	1.148	1.152	1.1924	1.255	1.145	.110	66.86	26
1.161	1.163	1.165	1.171	1.182	1.181	1.182	1.188	1.188	1.196	1.1661	1.196	1.150	.046	66.21	27
1.172	1.164	1.144	1.128	1.111	1.082	1.072	1.061	1.048	1.038	1.1662	1.227	1.038	.189	66.21	28
.954	.947	.952	.943	.943	.948	.949	.956	.953	.955	.9810	1.033	.943	.090	61.51	29
1.183	1.201	1.223	1.251	1.270	1.280	1.299	1.323	1.333	1.345	1.1431	1.345	.955	.390	65.62	30
1.420	1.413	1.412	1.406	1.400	1.400	1.392	1.387	1.380	1.372	1.4002	1.430	1.351	.079	72.15	31
1.1312	1.1318	1.1306	1.1291	1.1288	1.1288	1.1278	1.1260	1.1274	1.1283	1.1301	1.190	1.600	.130	---------	
65.32	65.34	65.32	65.26	65.26	65.26	65.23	65.18	65.21	65.23	65.29	66.81	63.51	3.30	65.29	

JUNE, 1882.

TABLE XVI.—*Atmospheric pressure* (*reduced to sea*),[a] *June*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	1.362	1.352	1.346	1.348	1.348	1.350	1.333	1.327	1.314	1.302	1.286	1.281	1.275	1.263
2	1.169	1.167	1.163	1.160	1.157	1.151	1.144	1.134	1.142	1.126	1.117	1.108	1.106	1.101
3	1.080	1.082	1.089	1.088	1.089	1.092	1.098	1.093	1.100	1.093	1.087	1.083	1.078	1.081
4	1.050	1.048	1.046	1.036	1.039	1.026	1.006	.991	.988	.977	.963	.959	.951	.951
5	.947	.952	.951	.955	.955	.954	.950	.958	.969	.956	.953	.952	.945	.952
6	.974	.978	.977	.982	.984	.990	1.001	1.010	1.011	1.011	1.012	1.019	1.023	1.024
7	1.034	1.030	1.029	1.028	1.032	1.027	1.019	1.016	1.010	1.000	.995	.983	.980	.974
8	.944	.945	.940	.951	.954	.949	.958	.960	.971	.969	.971	.965	.972	.973
9	.995	.996	.993	1.008	1.009	1.005	1.011	1.013	1.022	1.014	1.016	1.018	1.024	1.029
10	1.093	1.096	1.099	1.095	1.095	1.092	1.091	1.088	1.094	1.093	1.085	1.085	1.081	1.076
11	1.098	1.102	1.102	1.101	1.101	1.085	1.081	1.078	1.064	1.051	1.040	1.027	1.012	1.005
12	.887	.884	.880	.873	.875	.863	.855	.856	.857	.857	.862	.868	.883	.891
13	.993	1.000	.997	1.001	1.000	1.004	.997	.998	.984	.975	.965	.947	.940	.936
14	.864	.856	.853	.844	.843	.837	.828	.822	.818	.822	.814	.812	.809	.806
15	.714	.696	.682	.668	.658	.635	.601	.567	.551	.530	.513	.494	.484	.476
16	[illegible]	.420	.416	.432	.457	.463	.464	.464	.464	.467	.470	.469	.466	.466
17	.499	.503	.513	.515	.522	.526	.545	.545	.556	.552	.553	.552	.555	.556
18	.560	.558	.558	.558	.557	.560	.562	.566	.574	.576	.571	.581	.582	.586
19	.640	.638	.650	.658	.662	.671	.694	.687	.705	.710	.707	.718	.723	.728
20	.785	.793	.797	.800	.807	.804	.813	.826	.842	.852	.862	.872	.880	.895
21	1.006	1.016	1.014	1.025	1.027	1.036	1.051	1.054	1.055	1.060	1.059	1.055	1.047	1.047
22	.978	.962	.950	.940	.944	.937	.913	.901	.889	.863	.845	.826	.797	.787
23	.702	.706	.713	.709	.717	.714	.712	.706	.707	.689	.699	.728	.760	.792
24	1.071	1.075	1.080	1.069	1.071	1.077	1.080	1.076	1.083	1.079	1.069	1.057	1.056	1.056
25	1.082	1.090	1.091	1.091	1.093	1.098	1.092	1.097	1.103	1.102	1.101	1.109	1.014	1.111
26	1.088	1.085	1.087	1.087	1.084	1.084	1.076	1.078	1.081	1.077	1.076	1.079	1.086	1.075
27	1.051	1.047	1.044	1.050	1.045	1.042	1.036	1.038	1.034	1.042	1.031	1.033	1.018	1.022
28	1.056	1.062	1.077	1.087	1.088	1.080	1.077	1.079	1.075	1.072	1.079	1.074	1.056	1.055
29	1.009	1.010	1.020	1.024	1.027	1.024	1.036	1.033	1.040	1.024	1.012	.987	.994	1.004
30	.986	.988	.988	.984	.986	.985	.980	.965	.973	.954	.952	.948	.952	.943
Means	.9380	.9379	.9382	.9389	**.9409**	.9387	.9368	.9342	.9359	.9298	.9255	.9230	**.9216**	.9220
Means in millimeters, 700+	60.41	60.41	60.41	60.44	**60.49**	60.44	60.39	60.31	60.36	60.21	60.10	60.03	**59.99**	60.00

[a] By constant +.030. [b] Mercurial barometer No. 22[illegible].

JUNE, 1882.

B.	Gravity correction.
30	0.074
31	0.077

TABLE XVI.—*Atmospheric pressure (reduced to sea), June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

H=29.000+ $\phi=+81° 44'$ $\lambda=-64° 45'=-4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700+	Date.
1.249	1.244	1.245	1.242	1.229	1.222	1.214	1.202	1.194	1.182	**1.2796**	**1.362**	1.182	.180	**69.10**	1
1.088	1.085	1.094	1.083	1.086	1.082	1.074	1.076	1.080	1.079	1.1155	1.169	1.074	.095	64.93	2
1.078	1.068	1.074	1.071	1.069	1.068	1.062	1.059	1.053	1.053	1.0787	1.100	1.053	.047	63.99	3
.950	.944	.940	.941	.947	.942	.939	.941	.946	.946	.9778	1.050	.939	.111	61.42	4
.952	.958	.957	.962	.967	.962	.964	.965	.966	.966	.9570	.969	.947	.022	60.90	5
1.021	1.027	1.023	1.025	1.025	1.028	1.028	1.034	1.030	1.031	1.0112	1.034	.974	.060	62.27	6
.965	.958	.952	.946	.943	.946	.940	.937	.934	.942	.9842	1.034	.934	.100	61.58	7
.978	.982	.984	.985	.986	.979	.986	.997	.993	1.000	.9707	1.000	.940	.060	61.25	8
1.036	1.039	1.053	1.055	1.058	1.069	1.071	1.073	1.073	1.080	1.0317	1.080	.993	.087	62.80	9
1.075	1.081	1.077	1.081	1.084	1.098	1.092	1.096	1.097	1.100	1.0893	1.100	1.075	.025	64.25	10
.994	.987	.996	.933	.940	.930	.922	.917	.902	.890	1.0135	1.102	.890	.212	62.32	11
.905	.929	.946	.956	.963	.969	.984	.989	.669	.999	.9092	.999	.855	.144	59.68	12
.936	.929	.911	.905	.897	.885	.880	.877	.875	.874	.9461	1.004	.874	.130	60.61	13
.802	.802	.800	.800	.792	.779	.772	.759	.740	.730	.8085	.864	.730	.134	57.11	14
.462	.456	.446	.449	.449	.439	.424	.424	.429	.430	.5282	.714	.424	.290	49.99	15
.461	.459	.456	.459	.463	.471	.471	.473	.486	.489	**.4596**	.489	**.416**	.073	**48.27**	16
.561	.560	.552	.561	.559	.561	.559	.558	.559	.560	.5451	.561	.499	.062	50.43	17
.592	.593	.602	.608	.612	.615	.622	.626	.626	.637	.5868	.637	.557	.080	51.50	18
.737	.750	.754	.754	.759	.765	.775	.780	.783	.788	.7182	.788	.638	.150	54.82	19
.905	.909	.927	.942	.952	.964	.968	.979	.983	.998	.8814	.998	.785	.213	58.97	20
1.044	1.044	1.044	1.044	1.034	1.025	1.012	1.007	.995	.988	1.0329	1.060	.988	.072	62.83	21
.767	.766	.748	.747	.737	.727	.718	.719	.713	.704	.8282	.978	.704	.274	57.61	22
.830	.871	.913	.948	.973	.983	1.010	1.025	1.035	1.049	.8205	1.049	.689	.360	57.41	23
1.060	1.051	1.057	1.066	1.062	1.064	1.073	1.073	1.076	1.079	1.0692	1.083	1.051	.032	63.74	24
1.119	1.120	1.129	1.125	1.118	1.115	1.113	1.111	1.098	1.093	1.1048	1.129	1.082	.047	64.56	25
1.075	1.083	1.085	1.085	1.071	1.076	1.071	1.064	1.058	1.059	1.0779	1.088	1.058	.030	63.96	26
1.018	1.015	1.015	1.007	1.009	1.018	1.025	1.026	1.050	1.078	1.0331	1.078	1.007	.871	62.83	27
1.054	1.044	1.044	1.032	1.029	1.020	1.012	1.003	1.006	1.009	1.0529	1.088	1.003	.085	63.34	28
1.005	1.001	1.003	.993	.999	.999	1.000	.995	1.002	.997	1.0099	1.040	.987	.053	62.24	29
.943	.945	.947	.948	.948	.960	.975	.965	.973	.965	.9674	.988	.943	.045	61.10	30
.9221	.9233	.9246	.9251	.9253	.9254	.9252	.9250	.9250	.9265	.9295	.988	.876	.111	----------	
60.00	60.03	60.08	60.08	60.08	60.08	60.08	60.08	60.08	60.10	60.18	61.68	58.83	2.82	60.19	

JULY, 1882.

TABLE XVII.—*Atmospheric pressure (reduced to sea)*,[a] *July*, 1882.

Washington mean time. Reduce to local mean time by adding 49^{m}

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.967	.967	.965	.965	.970	.973	.974	.968	.971	.969	.972	.963	.958	.956
2	.992	1.003	1.010	1.010	1.023	1.023	1.033	1.041	1.041	1.045	1.050	1.055	1.055	1.062
3	1.117	1.124	1.124	1.124	1.137	1.144	1.145	1.153	1.158	1.152	1.165	1.164	1.159	1.172
4	1.192	1.189	1.186	1.188	1.181	1.156	1.169	1.154	1.139	1.124	1.102	1.082	1.074	1.066
5	.970	.962	.959	.956	.956	.944	.941	.939	.933	.923	.906	.902	.902	.900
6	.845	.840	.833	.829	.826	.816	.818	.816	.808	.801	.793	.795	.783	.787
7	.810	.810	.810	.810	.808	.799	.792	.792	.790	.772	.766	.765	.774	.770
8	.760	.754	.745	.743	.726	.702	.682	.662	.649	.653	.647	.648	.648	.640
9	.728	.743	.752	.757	.763	.776	.774	.784	.793	.797	.808	.817	.833	.849
10	.900	.900	.895	.901	.901	.901	.903	.901	.909	.904	.909	.918	.930	.943
11	1.018	1.018	1.014	1.017	1.023	1.028	1.031	1.033	1.025	1.025	1.024	1.017	1.019	1.023
12	1.027	1.022	1.021	1.024	1.013	1.000	1.003	.990	.981	.964	.959	.936	.925	.912
13	.758	.743	.734	.723	.710	.727	.693	.687	.657	.662	.636	.619	.615	.599
14	.469	.471	.478	.473	.486	.485	.490	.487	.493	.494	.503	.515	.528	.543
15	.533	.522	.517	.515	.503	.503	.486	.502	.515	.522	.530	.531	.533	.549
16	.502	.492	.484	.476	.476	.465	.471	.473	.483	.485	.486	.498	.500	.502
17	.569	.585	.600	.625	.630	.632	.645	.657	.658	.661	.668	.671	.673	.674
18	.648	.645	.640	.633	.620	.609	.594	.580	.566	.549	.541	.535	.514	.505
19	.447	.452	.461	.458	.462	.463	.473	.472	.473	.476	.476	.483	.476	.479
20	.502	.513	.513	.514	.517	.534	.553	.555	.541	.539	.543	.543	.558	.561
21	.653	.661	.675	.679	.690	.696	.700	.705	.715	.717	.710	.710	.710	.712
22	.712	.720	.719	.719	.714	.712	.717	.711	.706	.699	.692	.691	.692	.687
23	.757	.773	.778	.780	.778	.781	.776	.775	.778	.776	.770	.772	.769	.761
24	.780	.778	.779	.775	.767	.755	.740	.728	.718	.701	.687	.674	.662	.652
25	.582	.576	.576	.568	.567	.567	.558	.564	.557	.548	.539	.539	.538	.536
26	.564	.570	.572	.578	.577	.586	.587	.588	.584	.566	.556	.558	.548	.551
27	.499	.497	.499	.496	.492	.491	.486	.481	.479	.466	.457	.452	.439	.425
28	.323	.304	.290	.284	.268	.238	.224	.227	.193	.206	.185	.181	.178	.179
29	.241	.263	.284	.310	.329	.347	.371	.378	.413	.433	.446	.470	.483	.507
30	.726	.747	.764	.774	.778	.781	.780	.793	.790	.783	.781	.783	.775	.778
31	.748	.743	.740	.730	.720	.706	.689	.681	.660	.640	.623	.608	.590	.573
Means	.7206	.7222	.7231	**.7237**	.7229	.7206	.7193	.7186	.7154	.7114	.7074	.7063	**.7045**	.7049
Means in millimeters, 700 +	54.90	54.92	54.95	**54.97**	54.95	54.90	54.85	54.85	54.75	54.65	54.55	54.52	**54.48**	54.50

[a] By constant + .030.

[b] Mercurial barometer No. 229.

JULY, 1882.

TABLE XVII.—*Atmospheric pressure (reduced to sea), July, 1882.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^{m}

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700 +	Date.
.957	.964	.961	.967	.959	.965	.968	.973	.975	.981	.9670	.981	.956	.025	61.15	1
1.091	1.076	1.087	1.093	1.102	1.108	1.109	1.109	1.114	1.114	1.0602	1.114	.992	.122	63.51	2
1.173	1.182	1.191	1.196	1.201	1.207	1.211	1.207	1.202	1.189	**1.1665**	**1.211**	1.117	.094	**66.20**	3
1.070	1.060	1.040	1.034	1.027	1.019	1.007	.999	.992	.979	1.0929	1.192	.979	.213	64.35	4
.899	.906	.902	.890	.877	.875	.862	.859	.853	.847	.9110	.970	.847	.123	59.73	5
.787	.790	.808	.808	.812	.802	.806	.795	.804	.806	.8087	.845	.783	.062	57.14	6
.780	.791	.778	.781	.787	.780	.779	.774	.772	.773	.7860	.810	.765	.045	56.55	7
.655	.661	.669	.666	.680	.685	.692	.701	.708	.715	.6871	.760	.640	.120	54.04	8
.863	.870	.887	.892	.892	.909	.900	.910	.898	.905	[illegible]	.910	.728	.182	57.64	9
.955	.963	.988	1.002	1.006	1.005	1.011	1.018	1.016	1.016	.9456	1.018	.895	.123	60.61	10
1.023	1.027	1.034	[illegible]	1.042	1.043	1.037	1.038	1.036	1.030	1.0277	1.043	1.014	.029	62.69	11
.902	.890	.880	.873	.862	.854	.841	.815	.789	.769	.9272	1.027	.769	.258	60.13	12
.593	.581	.570	.556	.552	.538	.523	.508	.496	.476	.6232	.758	.476	.282	52.41	13
.558	.568	.584	.592	.594	.585	.582	.572	.558	.549	.5274	.594	.469	.125	49.97	14
.559	.569	.571	.571	.564	.559	.546	.537	.521	.509	.5320	.571	.486	.085	50.10	15
.510	.513	.526	.529	.532	.540	.545	.555	.559	.559	.5067	.559	.465	.094	49.47	16
.680	.679	.693	.683	.680	.680	.677	.666	.660	.653	.6541	.693	.569	.124	53.20	17
.493	.475	.468	.468	.458	.450	.448	.443	.441	.443	.5319	.648	.441	.207	50.10	18
.481	.480	.478	.484	.491	.493	.493	.491	.489	.493	.4760	.493	.447	.046	48.67	19
.573	.593	.584	.598	.606	.617	.616	.625	.637	.644	.5658	.644	.502	.142	50.96	20
.714	.718	.722	.717	.711	.712	.711	.716	.706	.706	.7028	.722	.653	.069	54.45	21
.712	.689	.694	.694	.699	.708	.717	.724	.727	.742	.7082	.742	.687	.055	54.57	22
.761	.766	.764	.773	.765	.767	.769	.777	.772	.777	.7714	.781	.757	.024	56.17	23
.644	.642	.640	.638	.633	.620	.610	.600	.590	.589	.6834	.780	.589	.191	53.94	24
.542	.546	.545	.548	.545	.543	.545	.555	.551	.560	.5540	.582	.536	.046	50.66	25
.546	.542	.540	.539	.533	.531	.521	.518	.508	.505	.5528	.588	.505	.083	50.64	26
.420	.416	.411	.403	.401	.381	.368	.361	.349	.341	.4379	.499	.341	.158	47.71	27
.180	.190	.190	.189	.190	.195	.202	.214	.219	.226	**.2198**	.323	**.178**	.145	**42.17**	28
.535	.561	.579	.605	.619	.640	.657	.680	.708	.721	.4825	.721	.241	.480	48.83	29
.779	.782	.780	.776	.768	.764	.762	.753	.748	.747	.7705	.793	.726	.067	56.14	30
.568	.556	.553	.543	.530	.515	.512	.503	.504	.496	.6118	.748	.496	.252	52.13	31
.7098	.7112	.7135	.7144	.7135	.7129	.7105	7094	.7066	.7051	.7136	.778	.647	.131	--------	
54.62	54.65	54.72	54.72	54.72	54.70	54.62	54.60	54.55	54.50	54.72	56.43	53.02	3.33	54.71	

AUGUST, 1882.

TABLE XVIII.—*Atmospheric pressure (reduced to sea)*,[a] *August*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.490	.501	.492	.499	.501	.502	.515	.521	.529	.529	.542	.555	.566	.572
2	.670	.676	.682	.688	.706	.709	.709	.719	.726	.722	.728	.733	.739	.753
3	.843	.843	.848	.858	.866	.880	.893	.898	.905	.903	.909	.922	.924	.936
4	.964	.957	.953	.948	.943	.938	.927	.919	.900	.899	.886	.883	.872	.866
5	.788	.785	.785	.798	.813	.813	.818	.818	.824	.819	.816	.821	.821	.821
6	.839	.837	.847	.862	.867	.876	.880	.899	.903	.915	.925	.940	.953	.970
7	1.099	1.103	1.107	1.103	1.100	1.099	1.088	1.068	1.059	1.045	1.033	1.008	1.000	.977
8	.789	.783	.765	.764	.760	.756	.751	.734	.715	.707	.694	.677	.665	.656
9	.526	.512	.516	.509	.501	.507	.505	.498	.486	.473	.466	.463	.459	.463
10	.614	.638	.651	.666	.682	.700	.700	.700	.706	.698	.691	.682	.684	.690
11	.657	.655	.656	.658	.655	.654	.652	.653	.656	.651	.648	.640	.648	.653
12	.719	.726	.741	.750	.758	.753	.769	.772	.767	.770	.769	.770	.768	.770
13	.806	.802	.797	.800	.805	.810	.816	.815	.801	.799	.795	.792	.795	.789
14	.831	.836	.840	.849	.851	.865	.870	.879	.883	.884	.882	.886	.892	.897
15	.906	.904	.905	.905	.909	.911	.915	.901	.898	.899	.889	.880	.879	.880
16	.845	.845	.853	.856	.858	.859	.865	.858	.865	.859	.853	.851	.857	.849
17	.834	.840	.844	.849	.855	.862	.872	.873	.886	.894	.897	.918	.919	.929
18	1.015	1.023	1.019	1.013	1.000	.997	.984	.971	.967	.947	.939	.912	.902	.881
19	.710	.683	.666	.668	.645	.639	.626	.617	.615	.598	.563	.576	.559	.556
20	.521	.508	.532	.541	.548	.563	.564	.573	.598	.611	.619	.620	.643	.648
21	.702	.708	.709	.708	.707	.710	.698	.701	.703	.691	.677	.662	.661	.674
22	.689	.685	.689	.689	.694	.705	.704	.707	.712	.716	.713	.713	.703	.707
23	.719	.724	.736	.751	.758	.769	.768	.779	.780	.790	.797	.802	.813	.821
24	.924	.929	.929	.930	.935	.934	.939	.936	.934	.923	.911	.901	.899	.894
25	.869	.873	.875	.874	.874	877	.880	.881	.880	.884	.902	.914	.924	.941
26	1.065	1.070	1.071	1.074	1.079	1.073	1.079	1.075	1.071	1.062	1.061	1.048	1.046	1.034
27	1.002	1.018	1.023	1.023	1.033	1.034	1.029	1.024	1.026	1.021	1.016	1.013	1.019	1.014
28	1.023	1.031	1.034	1.035	1.029	1.038	1.030	1.025	1.015	1.009	1.001	.993	.986	.981
29	.900	.903	.903	.882	.876	.864	.854	.835	.827	.811	.795	.791	.784	.786
30	.836	.845	.847	.857	.863	.867	.870	.874	.870	.876	.880	.891	.888	.891
31	.779	.796	.784	.776	.768	.760	.753	.740	.722	.717	.715	.709	.698	.700
Means	.8063	.8077	.8096	.8124	.8142	**.8169**	**.8169**	.8149	.8138	.8104	.8068	**.8054**	**.8054**	.8064
Means in millimeters, 700 +	57.06	57.11	57.16	57.21	57.26	**57.34**	**57.34**	57.29	57.26	57.16	57.09	**57.04**	**57.04**	57.06

[a] By constant + .030.

[b] Mercurial barometer No. 229.

AUGUST, 1882.

TABLE XVIII.—*Atmospheric pressure (reduced to sea), August,* 1882.

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700 +	Date.
.591	.597	.606	.624	.637	.645	.655	.655	.663	.676	.5693	.676	.490	.186	51.04	1
.760	.760	.778	.786	.799	.803	.813	.820	.819	.827	.7469	.827	.670	.157	55.56	2
.950	.953	.960	.968	.969	.970	.969	.968	.965	.962	.9192	.970	.843	.127	59.93	3
.854	.844	.843	.834	.825	.818	.813	.797	.792	.784	.8775	.964	.784	.180	58.88	4
.827	.827	.823	.827	.826	.826	.829	.820	.837	.835	.8174	.837	.785	.052	57.34	5
.986	1.006	1.024	1.039	1.048	1.070	1.069	1.078	1.092	1.085	.9588	1.092	.837	.255	60.95	6
.965	.954	.926	.913	.893	.879	.855	.834	.825	.808	.9892	**1.107**	.808	.299	61.71	7
.647	.630	.628	.606	.588	.577	.575	.556	.549	.534	.6711	.789	.534	.255	53.63	8
.482	.478	.486	.494	.504	.513	.529	.528	.559	.585	**.5018**	.585	**.459**	.126	**49.34**	9
.690	.692	.693	.689	.689	.687	.673	.662	.660	.668	.6794	.706	.614	.092	53.83	10
.646	.652	.664	.672	.670	.688	.696	.693	.702	.711	.6638	.711	.640	.071	53.45	11
.768	.774	.779	.784	.792	.793	.795	.798	.801	.800	.7702	.801	.719	.082	56.14	12
.791	.789	.795	.804	.815	.818	.813	.827	.824	.820	.8049	.827	.789	.038	57.04	13
.903	.900	.920	.924	.919	.911	.904	.909	.910	.910	.8856	.924	.831	.093	59.09	14
.874	.870	.866	.859	.857	.850	.844	.839	.848	.851	.8808	.915	.839	.076	58.97	15
.852	.848	.844	.846	.843	.844	.842	.838	.834	.832	.8498	.865	.832	.033	58.18	16
.947	.960	.965	.982	.993	1.003	1.003	1.003	1.018	1.018	.9235	1.018	.834	.184	60.05	17
.869	.856	.837	.825	.802	.777	.762	.749	.730	.716	.8955	1.023	.716	.307	59.34	18
.548	.536	.517	.520	.512	.514	.513	.505	.518	.531	.5806	.710	.505	.205	51.35	19
.642	.657	.670	.669	.675	.679	.695	.690	.692	.692	.6188	.695	.508	.187	52.31	20
.674	.670	.679	.675	.679	.688	.682	.686	.691	.686	.6884	.710	.661	.049	54.06	21
.711	.712	.721	.719	.719	.718	.721	.721	.716	.721	.7085	.721	.685	.036	54.57	22
.832	.842	.855	.865	.876	.882	.894	.899	.911	.922	.8160	.922	.719	.203	57.31	23
.892	.891	.887	.887	.884	.885	.885	.887	.884	.883	.9076	.939	.883	.056	59.65	24
.964	.985	1.005	1.024	1.050	1.056	1.064	1.075	1.070	1.074	.9506	1.075	.869	.206	60.75	25
1.023	1.006	.999	.993	.986	.986	.984	.986	.997	.994	**1.0359**	1.079	.984	.095	**62.90**	26
1.014	1.023	1.018	1.021	1.021	1.017	1.022	1.019	1.019	1.025	1.0206	1.034	1.002	.032	62.52	27
.978	.960	.964	.952	.952	.943	.929	.921	.909	.904	.9851	1.038	.904	.134	61.61	28
.784	.787	.792	.792	.802	.805	.802	.811	.818	.830	.8264	.903	.784	.119	57.56	29
.886	.885	.882	.868	.864	.856	.840	.836	.821	.811	.8627	.891	.811	.080	58.51	30
.692	.683	.683	.675	.665	.658	.652	.640	.837	.631	.7105	.799	.631	.168	54.62	31
.8078	.8073	.8100	.8108	.8114	.8116	.8104	.8081	.8103	.8105	.8102	.876	.741	.135	-------	
57.11	57.09	57.16	57.19	57.19	57.21	57.16	57.11	57.16	57.16	57.16	58.83	55.41	3.43	57.17	

SEPTEMBER, 1882.

TABLE XIX.—*Atmospheric pressure (reduced to sea)*,[a] *September*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.611	.605	.598	.585	.587	.581	.571	.572	.566	.567	.567	.570	.570	.573
2	.579	.581	.578	.575	.566	.562	.550	.545	.544	.535	.534	.524	.528	.529
3	.590	.595	.607	.611	.607	.614	.615	.613	.615	.606	.598	.595	.588	.579
4	.511	.509	.514	.516	.527	.526	.525	.528	.530	.533	.531	.538	.550	.561
5	.650	.655	.660	.676	.688	.693	.701	.711	.723	.724	.725	.729	.734	.734
6	.672	.659	.635	.627	.604	.584	.569	.560	.539	.521	.518	.514	.527	.530
7	.630	.635	.643	.647	.653	.675	.682	.686	.698	.699	.704	.709	.718	.725
8	.804	.817	.827	.829	.840	.842	.847	.844	.846	.850	.845	.856	.860	.863
9	.934	.948	.960	.972	.983	.994	1.001	1.014	1.027	1.035	1.038	1.054	1.061	1.074
10	1.126	1.127	1.143	1.141	1.140	1.140	1.145	1.145	1.150	1.150	1.152	1.153	1.153	1.158
11	1.171	1.169	1.167	1.167	1.162	1.145	1.129	1.115	1.098	1.094	1.070	1.061	1.038	1.028
12	.892	.880	.882	.875	.872	.871	.863	.866	.864	.860	.853	.854	.856	.856
13	.876	.875	.876	.879	.872	.874	.880	.867	.874	.867	.857	.857	.851	.852
14	.799	.799	.794	.798	.800	.805	.802	.800	.795	.790	.794	.788	.782	.782
15	.794	.805	.808	.818	.829	.833	.826	.822	.823	.817	.813	.807	.801	.808
16	.885	.891	.908	.923	.932	.951	.962	.964	.968	.971	.970	.970	.974	.989
17	1.083	1.092	1.105	1.116	1.133	1.142	1.146	1.148	1.142	1.156	1.153	1.156	1.156	1.168
18	1.171	1.172	1.179	1.178	1.179	1.179	1.169	1.161	1.152	1.140	1.128	1.109	1.100	1.087
19	.966	.971	.978	.978	.968	.953	.937	.937	.916	.898	.856	.830	.822	.793
20	.535	.518	.491	.471	.451	.434	.438	.427	.406	.393	.385	.372	.358	.346
21	.292	.292	.285	.285	.285	.281	.276	.273	.276	.273	.278	.281	.294	.304
22	.438	.438	.448	.448	.456	.470	.463	.463	.462	.451	.453	.455	.463	.465
23	.468	.457	.456	.448	.449	.443	.450	.446	.444	.445	.446	.442	.444	.452
24	.509	.513	.526	.527	.527	.519	.521	.521	.515	.513	.512	.507	.511	.507
25	.547	.561	.571	.598	.611	.611	.626	.636	.637	.652	.667	.673	.682	.693
26	.652	.642	.628	.623	.616	.601	.591	.577	.560	.548	.536	.532	.509	.507
27	.518	.515	.533	.533	.541	.546	.552	.550	.553	.555	.556	.555	.556	.564
28	.700	.706	.717	.722	.722	.728	.732	.743	.749	.755	.765	.775	.789	.793
29	.933	.953	.968	.982	.999	1.006	1.022	1.026	1.028	1.031	1.031	1.030	1.019	1.012
30	.841	.824	.810	.792	.785	.770	.759	.742	.725	.713	.702	.694	.681	.684
Means	.7393	.7401	.7432	.7447	**.7461**	.7458	.7450	.7434	.7408	.7381	.7346	.7330	**.7325**	.7339
Means in millimeters, 700+	55.36	55.38	55.46	55.51	**55.53**	55.53	55.51	55.46	55.41	55.33	55.26	55.21	**55.18**	55.23

[a] By constant + .030.

[b] Mercurial barometer No. 229.

SEPTEMBER, 1882.

TABLE XIX.—*Atmospheric pressure* (*reduced to sea*), *September*, 1882.

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^{m}

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700 +	Date.
.574	.574	.577	.580	.595	.595	.587	.583	.583	.579	.5812	.611	.566	.045	51.35	1
.537	.540	.545	.560	.565	.570	.570	.585	.587	.591	.5575	.591	.524	.067	50.76	2
.575	.566	.561	.556	.551	.542	.532	.524	.514	.514	.5778	.615	.514	.101	51.26	3
.572	.584	.594	.606	.608	.620	.632	.633	.635	.637	.5633	.637	.509	.128	50.89	4
.736	.741	.741	.731	.732	.728	.719	.705	.692	.674	.7084	.741	.650	.091	54.57	5
.531	.542	.541	.559	.570	.574	.590	.590	.613	.614	.5743	.672	.514	.158	51.16	6
.730	.738	.741	.755	.768	.769	.777	.792	.794	.794	.7151	.794	.630	.164	54.75	7
.874	.878	.878	.883	.891	.897	.904	.910	.913	.919	.8632	.919	.804	.115	58.51	8
1.082	1.090	1.100	1.101	1.104	1.104	1.111	1.127	1.121	1.122	1.0482	1.127	.934	.193	63.20	9
1.163	1.167	1.159	1.167	1.173	1.173	1.169	1.174	1.168	1.168	**1.1543**	1.174	1.126	.048	**65.90**	10
1.022	1.005	.986	.977	.961	.959	.945	.932	.914	.906	1.0509	1.171	.906	.265	63.29	11
.868	.878	.879	.882	.885	.884	.877	.879	.883	.876	.8723	.892	.853	.039	58.73	12
.846	.849	.850	.844	.837	.834	.830	.828	.808	.808	.8538	.880	.808	.072	58.28	13
.792	.800	.791	.796	.796	.797	.795	.799	.789	.795	.7949	.805	.782	.023	56.78	14
.814	.824	.836	.840	.846	.854	.862	.863	.871	.865	.8283	.871	.794	.077	57.61	15
1.004	1.016	1.036	1.044	1.041	1.053	1.057	1.058	1.062	1.071	.9875	1.071	.885	.186	61.68	16
1.163	1.168	1.176	1.176	1.171	1.171	1.171	1.166	1.163	1.161	1.1492	1.176	1.083	.093	65.77	17
1.080	1.072	1.061	1.055	1.051	1.029	1.014	1.009	.994	.977	1.1019	**1.179**	.977	.202	64.58	18
.754	.743	.723	.697	.673	.644	.620	.597	.576	.553	.8076	.978	.553	.425	57.11	19
.343	.332	.336	.326	.316	.306	.306	.306	.298	.299	.3830	.535	.298	.237	46.32	20
.323	.341	.356	.377	.380	.404	.420	.425	.430	.436	**.3278**	.436	**.273**	.163	**44.91**	21
.463	.464	.463	.468	.466	.455	.462	.469	.468	.474	.4594	.474	.438	.036	48.25	22
.465	.469	.477	.477	.477	.488	.493	.494	.504	.504	.4641	.504	.442	.062	48.37	23
.515	.517	.518	.528	.533	.536	.528	.532	.539	.548	.5218	.548	.507	.041	49.84	24
.703	.713	.715	.715	.711	.705	.698	.693	.678	.664	.6567	.715	.547	.168	53.28	25
.507	.497	.507	.515	.515	.502	.493	.493	.500	.505	.5482	.652	.493	.159	50.50	26
.571	.586	.595	.605	.607	.620	.640	.653	.662	.682	.5770	.682	.515	.167	51.24	27
.807	.817	.838	.848	.861	.881	.887	.897	.913	.917	.7942	.917	.700	.217	56.75	28
1.006	1.000	.991	.975	.971	.943	.923	.906	.865	.861	.9784	1.031	.861	.170	61.42	29
.681	.677	.679	.682	.681	.689	.697	.700	.705	.727	.7267	.841	.677	.164	55.05	30
.7367	.7396	.7417	.7442	.7445	.7442	.7436	.7441	.7414	.7414	.7409	.808	.672	.136	--------	
55.31	55.38	55.43	55.48	55.48	55.48	55.48	55.48	55.41	55.41	55.41	57.11	53.65	3.45	55.40	

OCTOBER, 1882.

TABLE XX.—*Atmospheric pressure (reduced to sea)*,[a] *October*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.735	.741	.763	.775	.792	.807	.809	.810	.814	.816	.816	.815	.822	.829
2	.760	.748	.750	.743	.735	.731	.722	.711	.708	.707	.705	.705	.708	.723
3	.692	.696	.687	.694	.687	.673	.666	.647	.647	.630	.621	.605	.609	.613
4	.616	.613	.614	.621	.619	.614	.615	.613	.609	.613	.611	.624	.626	.629
5	.718	.735	.759	.763	.789	.796	.805	.824	.825	.827	.833	.836	.853	.862
6	.918	.911	.912	.912	.905	.906	.896	.887	.869	.862	.845	.828	.813	.805
7	.871	.891	.907	.922	.930	.929	.934	.932	.931	.931	.920	.915	.923	.910
8	.827	.818	.823	.835	.851	.849	.863	.891	.909	.915	.939	.932	.931	.934
9	.830	.810	.802	.788	.765	.750	.742	.735	.700	.686	.678	.653	.637	.595
10	.421	.418	.402	.395	.372	.361	.374	.361	.362	.387	.388	.406	.439	.462
11	.634	.650	.649	.674	.683	.683	.685	.663	.654	.633	.624	.615	.603	.592
12	.505	.511	.511	.524	.524	.529	.533	.547	.549	.564	.568	.580	.582	.580
13	.607	.610	.610	.618	.615	.625	.622	.634	.639	.640	.654	.644	.647	.637
14	.638	.650	.660	.668	.669	.672	.679	.674	.664	.649	.670	.658	.658	.643
15	.637	.643	.668	.645	.654	.657	.641	.652	.653	.645	.653	.658	.666	.678
16	.839	.858	.876	.891	.904	.923	.942	.947	.948	.958	.966	.968	.976	.993
17	1.087	1.092	1.101	1.108	1.111	1.111	1.110	1.115	1.116	1.117	1.113	1.113	1.103	1.092
18	[c].968	.953	.944	.940	.930	.927	.924	.922	.918	.918	.922	.924	.932	.948
19	1.077	1.092	1.107	1.112	1.122	1.132	1.134	1.152	1.160	1.169	1.181	1.185	1.201	1.219
20	1.263	1.256	1.256	1.240	1.193	1.207	1.197	1.181	1.151	1.132	1.111	1.098	1.091	1.088
21	1.053	1.037	1.021	1.012	.996	.988	.983	.980	.963	.951	.933	.921	.905	.898
22	.773	.765	.754	.763	.781	.784	.789	.807	.805	.807	.811	.818	.826	.841
23	.959	.980	.994	1.020	1.036	1.054	1.062	1.064	1.069	1.089	1.085	1.099	1.101	1.114
24	1.155	1.171	1.167	1.173	1.164	1.175	1.174	1.175	1.172	1.173	1.178	1.166	1.171	1.165
25	1.179	1.190	1.197	1.205	1.214	1.218	1.226	1.223	1.234	1.233	1.240	1.249	1.258	1.265
26	1.261	1.251	1.253	1.252	1.257	1.255	1.244	1.242	1.244	1.242	1.241	1.247	1.244	1.251
27	1.310	1.310	1.312	1.324	1.330	1.333	1.333	1.334	1.340	1.329	1.324	1.317	1.313	1.303
28	1.252	1.247	1.236	1.237	1.232	1.227	1.224	1.221	1.208	1.197	1.188	1.173	1.171	1.166
29	1.129	1.138	1.142	1.136	1.139	1.140	1.137	1.138	1.130	1.127	1.121	1.109	1.106	1.105
30	1.023	1.025	1.027	1.028	1.013	1.007	.999	.993	.983	.981	.985	.983	.988	.990
31	1.043	1.045	1.043	1.047	1.051	1.051	1.034	1.034	1.025	1.007	1.011	1.001	.995	1.003
Means	**.8961**	.8985	.9019	.9053	.9053	.9069	.9065	.9067	.9033	.9011	.9011	.8982	.8999	.9011
Means in millimeters, 700+	**59.34**	59.39	59.50	59.58	59.58	59.63	59.60	59.63	59.53	59.48	59.48	59.39	59.45	59.48

[a] By constant +.030. [b] Mercurial No. 229. [c] .100 subtracted from original reading, which was in error per Beck's aneroid.

OCTOBER, 1882.

TABLE XX.—*Atmospheric pressure (reduced to sea), October, 1882.*

D.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700 +	Date.
.829	.827	.828	.823	.818	.809	.795	.784	.774	.768	.8000	.829	.735	.094	56.91	1
.730	.725	.730	.740	.748	.735	.725	.723	.715	.704	.7263	.760	.704	.056	55.02	2
.617	.635	.638	.640	.640	.638	.629	.624	[illegible]	.618	.6444	.696	.605	.091	52.94	3
.635	.644	.648	.653	.662	.665	.675	.677	.688	.702	.6369	.702	.609	.093	52.77	4
.876	.888	.888	.897	.901	.903	.911	.914	.909	.911	.8426	.914	.718	.196	[illegible]	5
.788	.771	.765	.762	.765	.763	.783	.808	.829	.847	.8396	.918	.762	.156	57.92	6
.907	.900	.902	.903	.889	.879	.862	.847	.844	.833	.9005	.934	.833	.101	59.45	7
.923	.932	.933	.912	.903	.901	.894	.871	.860	.846	.8872	.939	.818	.121	59.12	8
.573	.564	.557	.504	.497	.496	.473	.466	.451	.454	.6336	.830	.451	.379	52.69	9
.464	.487	.518	.542	.548	.567	.579	.594	.611	.622	**.4616**	.622	**.361**	.261	**48.32**	10
.577	.570	.560	.546	.544	.533	.518	.509	.510	.503	.6005	.685	.503	.182	51.83	11
.587	.597	.598	.616	.628	.618	.613	.617	.603	.598	.5703	.628	.505	.123	51.06	12
.645	.649	.644	.633	.627	.619	.624	.612	.618	.625	.6291	.654	.607	.047	52.56	13
.649	.656	.660	.662	.657	.653	.653	.653	.638	.638	.6571	.679	.638	.041	53.28	14
.688	.706	.723	.734	.748	.762	.774	.776	.783	.814	.6941	.814	.637	.177	54.21	15
1.004	1.012	1.028	1.034	1.045	1.066	1.065	1.079	1.076	1.085	.9785	1.085	.839	.246	61.42	16
1.091	1.099	1.068	1.055	1.043	1.037	1.025	1.001	.988	.977	1.0780	1.117	.977	.140	63.96	17
.963	.973	.996	1.002	1.015	1.023	1.032	1.044	1.058	1.067	.9685	1.067	.918	.149	61.17	18
1.233	1.248	1.266	1.280	1.282	1.276	1.280	1.276	1.274	1.272	1.1971	1.282	1.077	.205	66.99	19
1.093	1.089	1.087	1.093	1.098	1.094	1.099	1.090	1.076	1.065	1.1395	1.263	1.065	.198	65.54	20
.878	.870	.858	.855	.832	.820	.800	.798	.795	.777	.9135	1.053	.777	.276	59.80	21
.850	.862	.879	.888	.896	.921	.924	.933	.934	.948	.8400	.948	.754	.194	57.92	22
1.124	1.126	1.128	1.123	1.133	1.136	1.144	1.147	1.147	1.144	1.0866	1.147	.959	.188	64.20	23
1.164	1.169	1.161	1.161	1.165	1.166	1.173	1.171	1.159	1.177	1.1681	1.178	1.155	.023	66.25	24
1.277	1.286	1.293	1.294	1.297	1.293	1.293	1.283	1.275	1.261	1.2493	1.297	1.179	.118	68.31	25
1.257	1.261	1.263	1.273	1.275	1.283	1.287	1.291	1.296	1.307	1.2615	1.307	1.241	.066	68.64	26
1.300	1.303	1.304	1.298	1.287	1.286	1.272	1.270	1.264	1.260	**1.3065**	**1.340**	1.260	.080	**69.76**	27
1.151	1.155	1.149	1.144	1.140	1.139	1.139	1.134	1.132	1.137	1.1833	1.252	1.132	.120	66.64	28
1.096	1.097	1.085	1.079	1.072	1.069	1.059	1.045	1.038	1.031	1.1029	1.142	1.031	.111	64.61	29
1.001	1.009	1.028	1.035	1.042	1.042	1.055	1.052	1.052	1.044	1.0160	1.055	.981	.074	62.39	30
1.013	.997	.994	.993	.986	.972	.957	.955	.942	.928	1.0053	1.051	.928	.123	62.12	31
.9027	.9064	.9090	.9088	**.9091**	.9087	.9068	.9046	.9019	.9020	.9038	.974	.831	.143	-------	
59.53	59.60	**59.68**	59.67	**59.68**	59.67	59.63	59.58	59.50	59.50	59.55	61.32	57.70	3.63	59.54	

NOVEMBER, 1882.

TABLE XXI.—*Atmospheric pressure (reduced to sea)*,[a] *November*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.922	.914	.910	.896	.884	.880	.867	.844	.839	.832	.810	.804	.793	.791
2	.745	.748	.750	.747	.747	.740	.742	.729	.725	.720	.710	.708	.708	.698
3	.672	.673	.671	.684	.686	.691	.696	.687	.693	.690	.684	.686	.688	.700
4	.797	.812	.820	.836	.834	.854	.862	.866	.869	.876	.866	.876	.883	.885
5	.907	.913	.911	.915	.911	.913	.916	.920	.920	.914	.921	.915	.924	.924
6	.983	.985	.990	.993	.996	.996	.996	.997	.995	.998	.995	.997	.991	1.006
7	1.054	1.055	1.070	1.076	1.076	1.078	1.086	1.079	1.082	1.082	1.082	1.075	1.076	1.073
8	1.016	1.010	1.011	1.018	1.018	1.021	1.016	1.033	1.054	1.064	1.082	1.108	1.131	1.155
9	1.342	1.358	1.371	1.385	1.401	1.401	1.419	1.432	1.436	1.442	1.447	1.448	1.448	1.454
10	1.394	1.387	1.371	1.360	1.336	1.325	1.301	1.289	1.278	1.248	1.227	1.206	1.191	1.165
11	1.058	1.035	1.028	1.018	1.005	.987	.969	.951	.930	.915	.889	.870	.860	.841
12	.653	.633	.619	.609	.595	.562	.548	.543	.528	.511	.503	.494	.481	.469
13	.301	.291	.270	.249	.268	.256	.280	.262	.249	.266	.252	.260	.252	.255
14	.303	.309	.317	.324	.339	.343	.351	.349	.346	.334	.326	.330	.320	.315
15	.224	.225	.213	.214	.190	.186	.164	.163	.203	.209	.229	.246	.276	.295
16	.558	.564	.564	.570	.576	.577	.577	.600	.600	.618	.643	.648	.659	.668
17	.685	.683	.680	.669	.656	.657	.658	.648	.647	.653	.650	.649	.643	.642
18	.728	.747	.753	.768	.771	.771	.780	.780	.775	.777	.792	.788	.788	.790
19	.854	.865	.873	.884	.890	.902	.902	.904	.911	.907	.904	.906	.911	.915
20	.956	.961	.966	.973	.974	.980	.978	.984	.989	1.005	1.011	1.009	1.023	1.015
21	1.080	1.087	1.097	1.102	1.110	1.122	1.121	1.130	1.134	1.136	1.140	1.144	1.152	1.159
22	1.270	1.291	1.304	1.316	1.317	1.324	1.325	1.335	1.333	1.335	1.330	1.336	1.333	1.341
23	1.351	1.353	1.356	1.366	1.378	1.385	1.383	1.379	1.362	1.372	1.382	1.379	1.378	1.382
24	1.400	1.403	1.404	1.411	1.404	1.395	1.386	1.378	1.375	1.354	1.348	1.346	1.344	1.330
25	1.235	1.239	1.232	1.233	1.232	1.236	1.228	1.238	1.236	1.239	1.240	1.242	1.264	1.277
26	1.440	1.452	1.468	1.472	1.492	1.502	1.505	1.506	1.504	1.497	1.495	1.490	1.492	1.486
27	1.320	1.312	1.288	1.281	1.272	1.235	1.239	1.231	1.210	1.198	1.187	1.172	1.156	1.146
28	1.104	1.116	1.129	1.129	1.129	1.130	1.139	1.144	1.155	1.155	1.160	1.166	1.168	1.171
29	1.256	1.265	1.275	1.300	1.310	1.301	1.302	1.300	1.302	1.298	1.280	1.266	1.263	1.248
30	1.063	1.056	1.036	1.033	1.039	1.035	1.016	1.033	1.043	1.028	1.033	1.030	1.036	1.039
Means	.9557	.9581	.9582	.9610	.9612	.9595	.9584	.9578	.9574	.9558	.9539	.9531	.9544	.9545
Means in millimeters, 700 +	60.87	60.92	60.92	61.00	61.00	60.97	60.92	60.92	60.90	60.87	60.82	60.80	60.82	60.82

[a] By constant +.030.

[b] Mercurial barometer No. 229.

NOVEMBER, 1882.

TABLE XXI.—*Atmospheric pressure* (*reduced to sea*), *November*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700 +	Date.
.784	.779	.775	.778	.765	.764	.756	.746	.742	.747	.8176	.922	.742	.180	57.36	1
.695	.700	.689	.682	.680	.673	.665	.662	.653	.653	.7070	.750	.653	.097	54.55	2
.706	.722	.725	.728	.729	.744	.750	.759	.775	.783	.7092	.783	.671	.112	54.60	3
.881	.895	.891	.891	.888	.890	.891	.890	.892	.894	.8683	.895	.797	.098	58.63	4
.933	.945	.945	.947	.950	.949	.955	.954	.965	.975	.9309	.975	.907	.068	60.24	5
1.003	1.010	1.007	1.014	1.016	1.024	1.030	1.032	1.039	1.041	1.0056	1.041	.983	.058	62.14	6
1.074	1.068	1.061	1.060	1.062	1.051	1.052	1.034	1.029	1.027	1.0651	1.086	1.027	.059	63.64	7
1.178	1.189	1.208	1.239	1.248	1.260	1.278	1.302	1.312	1.320	1.1363	1.320	1.010	.310	65.44	8
1.456	1.454	1.454	1.458	1.450	1.446	1.434	1.428	1.415	1.406	1.4244	1.458	1.342	.116	72.75	9
1.148	1.135	1.128	1.121	1.111	1.114	1.098	1.095	1.082	1.076	1.2161	1.394	1.076	.318	67.47	10
.827	.816	.802	.771	.756	.740	.722	.700	.684	.667	.8684	1.058	.667	.391	58.63	11
.463	.457	.444	.439	.417	.411	.384	.361	.338	.311	.4905	.653	.311	.342	49.03	12
.254	.255	.249	.260	.268	.272	.277	.291	.293	.293	**.2676**	.301	.249	.052	**43.39**	13
.291	.286	.263	.259	.251	.240	.239	.242	.229	.232	.2974	.351	.229	.122	44.13	14
.331	.367	.410	.437	.466	.497	.516	.523	.530	.552	.3194	.552	**.163**	.389	44.69	15
.674	.683	.685	.700	.695	.690	.690	.689	.684	.697	.6379	.700	.558	.142	52.79	16
.637	.627	.645	.648	.644	.669	.684	.691	.711	.713	.6620	.713	.627	.086	53.40	17
.788	.795	.805	.807	.808	.806	.817	.828	.841	.844	.7895	.844	.728	.116	56.65	18
.918	.922	.936	.944	.951	.950	.946	.947	.950	.954	.9144	.954	.854	.100	59.80	19
1.023	1.036	1.052	1.054	1.061	1.068	1.060	1.070	1.071	1.071	1.0163	1.071	.956	.115	62.39	20
1.168	1.189	1.205	1.204	1.213	1.221	1.233	1.241	1.248	1.254	1.1621	1.254	1.080	.174	66.10	21
1.346	1.347	1.349	1.349	1.352	1.352	1.346	1.338	1.345	1.342	1.3315	1.352	1.270	.082	70.42	22
1.378	1.399	1.396	1.393	1.392	1.398	1.393	1.389	1.396	1.401	1.3809	1.401	1.351	.050	71.67	23
1.316	1.317	1.311	1.304	1.293	1.285	1.277	1.266	1.259	1.252	1.3399	1.411	1.252	.159	70.62	24
1.288	1.309	1.316	1.341	1.351	1.363	1.378	1.391	1.403	1.423	1.2889	1.423	1.228	.195	69.33	25
1.477	1.472	1.453	1.441	1.420	1.403	1.388	1.375	1.356	1.344	**1.4554**	**1.506**	1.344	.162	**73.55**	26
1.146	1.134	1.129	1.119	1.112	1.106	1.101	1.094	1.091	1.099	1.1824	1.320	1.091	.229	66.61	27
1.184	1.198	1.203	1.206	1.206	1.217	1.226	1.227	1.234	1.249	1.1727	1.249	1.104	.145	66.38	28
1.230	1.217	1.204	1.182	1.170	1.137	1.132	1.115	1.090	1.076	1.2300	1.310	1.076	.234	67.83	29
1.041	1.062	1.060	1.054	1.057	1.049	1.064	1.069	1.070	1.061	1.0461	1.070	1.016	.054	63.15	30
.9546	.9595	.9600	.9610	.9594	.9600	.9594	.9583	.9576	.9586	.9578	1.037	.879	.158	--------	
60.85	60.97	60.97	**61.00**	60.95	60.97	60.95	60.92	60.92	60.95	60.92	62.93	58.91	4.01	60.91	

DECEMBER, 1882.

TABLE XXII.—*Atmospheric pressure (reduced to sea),*[a] *December, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	1.066	1.069	1.073	1.070	1.074	1.078	1.066	1.052	1.049	1.042	1.031	1.027	1.031	1.016
2	.964	.967	.967	.972	.961	.958	.946	.960	.955	.951	.948	.939	.950	.952
3	.966	.967	.971	.977	.993	.989	1.002	1.004	1.022	1.018	1.023	1.016	1.043	1.064
4	1.199	1.214	1.228	1.243	1.260	1.268	1.270	1.268	1.271	1.274	1.282	1.275	1.278	1.283
5	1.233	1.219	1.214	1.200	1.184	1.153	1.135	1.100	1.064	1.048	1.020	1.004	.982	.960
6	.863	.863	.876	.863	.891	.893	.891	.917	.941	.965	.966	.968	.966	.993
7	1.012	1.005	1.007	1.004	.995	.982	.973	.977	.985	1.005	1.012	1.014	1.018	1.019
8	.972	.967	.974	.994	1.011	1.013	1.031	1.039	1.048	1.063	1.070	1.072	1.085	1.093
9	1.234	1.246	1.270	1.283	1.290	1.294	1.301	1.299	1.305	1.310	1.304	1.312	1.312	1.307
10	1.355	1.351	1.348	1.359	1.357	1.355	1.348	1.356	1.335	1.342	1.341	1.338	1.338	1.353
11	1.448	1.443	1.465	1.470	1.460	1.472	1.496	1.472	1.469	1.474	1.482	1.493	1.480	1.475
12	1.553	1.564	1.568	1.572	1.581	1.582	1.579	1.571	1.582	1.573	1.581	1.576	1.578	1.575
13	1.576	1.572	1.573	1.576	1.582	1.577	1.559	1.555	1.540	1.526	1.511	1.489	1.464	1.458
14	1.343	1.352	1.352	1.345	1.347	1.353	1.331	1.322	1.324	1.309	1.320	1.324	1.298	1.283
15	1.346	1.343	1.339	1.331	1.323	1.332	1.332	1.333	1.337	1.328	1.332	1.323	1.323	1.320
16	1.447	1.456	1.463	1.466	1.479	1.482	1.483	1.481	1.485	1.483	1.483	1.470	1.478	1.471
17	1.317	1.305	1.276	1.257	1.231	1.215	1.194	1.165	1.138	1.119	1.107	1.088	1.076	1.063
18	.843	.822	.800	.781	.774	.741	.714	.701	.692	.664	.663	.655	.643	.630
19	.614	.636	.634	.646	.664	.654	.668	.674	.667	.667	.684	.684	.678	.677
20	.654	.659	.669	.684	.693	.710	.732	.750	.759	.780	.798	.818	.841	.862
21	1.118	1.142	1.155	1.171	1.189	1.188	1.197	1.207	1.206	1.202	1.208	1.208	1.199	1.201
22	1.174	1.170	1.167	1.169	1.163	1.146	1.146	1.133	1.126	1.125	1.122	1.114	1.106	1.105
23	1.226	1.246	1.267	1.281	1.303	1.311	1.313	1.324	1.326	1.335	1.326	1.336	1.335	1.331
24	1.212	1.206	1.190	1.190	1.182	1.179	1.168	1.163	1.153	1.141	1.141	1.144	1.141	1.130
25	1.034	1.060	1.049	1.038	1.028	1.015	.988	.986	.977	.966	.956	.965	.951	.950
26	.978	.987	.987	.989	1.011	1.028	1.044	1.053	1.075	1.091	1.115	1.142	1.163	1.168
27	1.188	1.191	1.185	1.192	1.192	1.197	1.200	1.195	1.216	1.214	1.225	1.232	1.248	1.248
28	1.169	1.162	1.146	1.129	1.116	1.112	1.084	1.063	1.043	1.031	1.009	.990	.966	.944
29	.874	.883	.886	.897	.903	.908	.921	.923	.945	.951	.956	.961	.962	.967
30	.867	.865	.856	.839	.832	.822	.821	.821	.824	.829	.838	.838	.856	.871
31	1.080	1.104	1.122	1.141	1.157	1.175	1.174	1.197	1.205	1.222	1.225	1.243	1.252	1.268
Means	**1.1266**	1.1302	1.1315	1.1332	1.1363	1.1349	1.1325	1.1310	1.1311	1.1306	1.1315	1.1309	1.1303	1.1302
Means in millimeters, 700+	**65.21**	65.29	65.34	65.37	65.44	65.42	65.34	65.32	65.32	65.32	65.34	65.32	65.29	65.29

[a] By constant +.030.

[b] Mercurial barometer No. 229.

DECEMBER, 1882.

TABLE XXII.—*Atmospheric pressure (reduced to sea), December, 1882.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer, above the sea, 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700+	Date.
1.009	1.009	.999	.999	.994	.993	.985	.977	.975	.966	1.0271	1.078	.966	.112	62.67	1
.950	.944	.954	.947	.947	.949	.953	.956	.953	.950	.9539	.972	.939	.033	60.82	2
1.083	1.077	1.095	1.113	1.121	1.127	1.141	1.161	1.169	1.189	1.0555	1.189	.966	.223	63.41	3
1.285	1.294	1.292	1.288	1.289	1.278	1.271	1.268	1.256	1.243	1.2657	1.294	1.199	.095	68.74	4
.942	.912	.898	.883	.876	.893	.885	.860	.862	.854	1.0159	1.233	.854	.379	62.39	5
1.005	1.030	1.033	1.053	1.048	1.048	1.039	1.031	1.036	1.025	.9668	1.053	.863	.190	61.15	6
1.016	1.022	1.014	1.003	.988	.974	.960	.966	.966	.965	.9951	1.022	.960	.062	61.86	7
1.099	1.127	1.139	1.156	1.165	1.176	1.185	1.203	1.219	1.220	1.0884	1.220	.967	.253	64.22	8
1.311	1.316	1.316	1.312	1.335	1.320	1.330	1.327	1.334	1.338	1.3044	1.338	1.234	.104	69.71	9
1.351	1.353	1.357	1.363	1.382	1.385	1.404	1.409	1.403	1.436	1.3633	1.436	1.335	.101	71.21	10
1.489	1.491	1.515	1.518	1.529	1.518	1.531	1.536	1.547	1.553	1.4928	1.553	1.443	.110	74.51	11
1.581	1.586	1.580	1.576	1.571	1.579	1.584	1.588	1.587	1.581	**1.5770**	**1.588**	1.553	.035	**76.64**	12
1.453	1.433	1.409	1.403	1.386	1.385	1.375	1.362	1.349	1.351	1.4777	1.582	1.349	.233	74.12	13
1.307	1.332	1.344	1.352	1.358	1.366	1.360	1.364	1.360	1.350	1.3373	1.366	1.283	.083	70.55	14
1.343	1.344	1.353	1.358	1.373	1.377	1.398	1.408	1.415	1.428	1.3516	1.428	1.320	.108	70.93	15
1.474	1.472	1.457	1.450	1.438	1.410	1.400	1.388	1.361	1.343	1.4508	1.485	1.343	.142	73.45	16
1.066	1.043	1.031	1.019	.989	.966	.944	.914	.891	.866	1.0950	1.317	.866	.451	64.40	17
.622	.623	.610	.602	.595	.594	.590	.590	.597	.606	.6730	.843	**.590**	.253	53.68	18
.678	.674	.670	.675	.670	.660	.649	.644	.652	.640	**66.08**	.684	.614	.070	**53.38**	19
.883	.916	.938	.969	.996	1.020	1.038	1.057	[illegible].078	1.109	.8502	1.100	.654	.446	58.18	20
1.199	1.207	1.199	1.198	1.190	1.187	1.189	1.184	1.173	1.184	1.1875	1.208	1.118	.090	66.76	2[illegible]
1.113	1.114	1.117	1.121	1.130	1.138	1.151	1.167	1.185	1.210	1.1422	1.210	1.105	.105	65.59	22
1.329	1.327	1.319	1.314	1.303	1.287	1.274	1.269	1.253	1.226	1.2984	1.336	1.226	.110	69.55	23
1.132	1.135	1.115	1.109	1.102	1.085	1.087	1.082	1.076	1.048	1.1380	1.212	1.048	.164	65.49	24
.966	.951	.963	.965	.965	.965	.961	.959	.962	.971	.9830	1.060	.950	.110	61.56	25
1.193	1.208	1.223	1.213	1.210	1.200	1.198	1.196	1.198	1.192	1.1192	1.223	.978	.245	65.01	26
1.250	1.249	1.247	1.247	1.242	1.234	1.226	1.213	1.190	1.173	1.2164	1.250	1.173	.077	67.47	27
.928	.906	.886	.871	.857	.852	.858	.859	.874	.875	.9888	1.169	.852	.317	61.71	28
.970	.972	.971	.972	.968	.951	.944	.937	.919	.889	.9346	.972	.874	.098	60.34	29
.887	.895	.934	.947	.976	.995	1.015	1.040	1.050	1.068	.8994	1.068	.821	.247	59.42	30
1.285	1.302	1.319	1.326	1.331	1.350	1.366	1.371	1.388	1.386	1.2495	1.388	1.080	.308	68.34	31
1.1352	1.1375	1.1386	1.1394	**1.1395**	1.1375	1.1387	1.1383	1.1380	1.1365	1.1341	1.222	1.049	.173	------	
65.42	65.49	65.52	**65.54**	**65.54**	65.49	65.52	65.49	65.49	65.44	65.39	67.62	63.23	4.39	65.40	

JANUARY, 1883.

TABLE XXIII.—*Atmospheric pressure (reduced to sea)*,[a] *January*, 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	1.399	1.411	1.417	1.412	1.399	1.417	1.415	1.407	1.401	1.393	1.387	1.379	1.372	1.356
2	1.211	1.193	1.185	1.172	1.168	1.163	1.156	1.143	1.123	1.108	1.092	1.084	1.090	1.096
3	1.199	1.219	1.231	1.246	1.260	1.271	1.286	1.295	1.298	1.301	1.307	1.291	1.295	1.292
4	1.136	1.125	1.108	1.098	1.071	1.039	1.011	.973	.951	.926	.886	.860	.822	.811
5	.642	.644	.639	.627	.618	.606	.601	.583	.575	.566	.565	.556	.560	.585
6	.672	.675	.686	.686	.684	.670	.674	.667	.662	.672	.671	.658	.651	.646
7	.543	.533	.522	.515	.484	.472	.470	.475	.469	.470	.487	.498	.517	.528
8	.662	.677	.696	.719	.732	.739	.749	.750	.766	.786	.795	.801	.820	.830
9	.912	.929	.952	.965	.985	.994	.995	1.005	1.015	1.023	1.028	1.045	1.055	1.061
10	1.203	1.233	1.[illegible]55	1.267	1.272	1.282	1.283	1.296	1.300	1.311	1.311	1.315	1.313	1.311
11	1.262	1.259	1.251	1.254	1.261	1.264	1.262	1.263	1.258	1.257	1.252	1.239	1.233	1.224
12	1.089	1.074	1.066	1.063	1.059	1.051	1.047	1.042	1.032	1.029	1.017	1.009	1.008	.992
13	.996	.993	.985	.987	.976	.976	.977	.971	.977	.975	.967	.956	.957	.950
14	.879	.881	.873	.87[illegible]	.862	.854	.849	.842	.834	.831	.819	.806	.803	.798
15	.699	.713	.726	.730	.750	.768	.775	.779	.783	.793	.797	.808	.808	.816
16	.932	.943	.968	.[illegible]73	.991	1.005	1.016	1.026	1.024	1.031	1.035	1.040	1.043	1.052
17	1.029	1.026	1.016	1.023	1.021	1.016	1.006	1.001	.995	.996	.993	.988	.981	.983
18	.959	.967	.968	.980	.975	.968	.962	.967	.961	.949	.938	.932	.922	.908
19	.843	.838	.836	.828	.823	.811	.805	.801	.784	.780	.770	.755	.756	.742
20	.935	.957	.971	.990	1.004	1.024	1.041	1.062	1.083	1.103	1.129	1.142	1.151	1.172
21	1.312	1.315	1.327	1.345	1.337	1.343	1.345	1.347	1.348	1.351	1.342	1.330	1.317	1.315
22	1.087	1.066	1.038	1.018	.983	.955	.909	.881	.861	.839	.824	.808	.786	.767
23	.598	.580	.553	.527	.497	.464	.446	.422	.399	.381	.367	.344	.328	.336
24	.349	.351	.345	.336	.321	.306	.297	.287	.269	.253	.230	.217	.202	.185
25	.154	.146	.144	.144	.142	.140	.130	.138	.137	.132	.122	.131	.131	.134
26	.225	.239	.261	.284	.298	.315	.329	.353	.363	.380	.392	.411	.434	.444
27	.509	.514	.523	.542	.552	.556	.557	.560	.561	.564	.570	.572	.582	.586
28	.618	.614	.623	.627	.631	.639	.641	.640	.648	.639	.637	.645	.653	.672
29	.811	.827	.837	.840	.853	.862	.862	.875	.879	.889	.901	.914	.925	.938
30	1.060	1.070	1.086	1.093	1.108	1.114	1.123	1.134	1.135	1.136	1.144	1.151	1.157	1.171
31	1.231	1.233	1.242	1.246	1.251	1.252	1.247	1.242	1.238	1.227	1.221	1.210	1.203	1.196
Means	.8760	.8[illegible]8	.8816	.8341	.8828	.8818	.8800	.8783	.8751	.8742	.8708	.8676	.8669	.8676
Means in millimeters, 700 +	58.83	58.91	58.99	59.04	59.02	58.99	58.94	58.88	58.81	58.78	58.71	58.63	58.61	58.63

[a] By constant + .030.

[b] Mercurial barometer No. 229.

B.	Gravity correction.
30	0.074
31	0.077

JANUARY, 1883.

TABLE XXIII.—*Atmospheric pressure (reduced to sea), January*, 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700 +	Date.
1.358	1.345	1.339	1.327	1.314	1.300	1.288	1.263	1.242	1.234	**1.3573**	**1.417**	1.234	.183	**71.06**	1
1.102	1.126	1.136	1.151	1.153	1.155	1.168	1.173	1.177	1.180	1.1460	1.211	1.084	.127	65.69	2
1.290	1.280	1.272	1.270	1.249	1.230	1.209	1.195	1.166	1.148	1.2542	1.307	1.148	.159	68.44	3
.819	.756	.729	.720	.713	.704	.699	.689	.668	.656	.8738	1.136	.656	.480	58.78	4
.598	.630	.650	.656	.657	.656	.672	.674	.669	.673	.6209	.674	.556	.118	52.36	5
.645	.649	.647	.639	.622	.619	.601	.595	.570	.555	.6465	.686	.555	.131	52.99	6
.548	.567	.574	.587	.590	.597	.617	.625	.631	.635	.5401	.635	.469	.166	50.30	7
.842	.850	.367	.874	.876	.885	.894	.891	.898	.903	.8042	.903	.662	.241	57.01	8
1.083	1.099	1.113	1.124	1.127	1.145	1.165	1.179	1.196	1.204	1.0583	1.204	.912	.292	63.46	9
1.311	1.317	1.306	1.302	1.294	1.282	1.279	1.277	1.265	1.263	1.2853	1.317	1.203	.114	69.29	10
1.219	1.217	1.198	1.185	1.173	1.160	1.149	1.132	1.117	1.101	1.2162	1.264	1.101	.163	67.47	11
.986	.990	.990	.986	.984	.987	.994	.997	.993	.993	1.0199	1.089	.984	.105	62.49	12
.949	.947	.942	.920	.913	.909	.897	.902	.895	.883	.9500	.996	.883	.113	60.72	13
.795	.775	.766	.758	.744	.724	.714	.706	.699	.703	.7994	.881	.699	.182	56.88	14
.834	.848	.854	.852	.874	.889	.905	.904	.913	.923	.8142	.923	.699	.224	57.26	15
1.058	1.067	1.074	1.074	1.071	1.068	1.061	1.061	1.050	1.055	1.0299	1.074	.932	.142	62.75	16
.983	.978	.978	.978	.981	.970	.970	.972	.970	.961	.9923	1.029	.961	.068	61.78	17
.893	.889	.880	.874	.869	.864	.868	.857	.861	.854	.9194	.980	.854	.126	59.93	18
.768	.781	.806	.828	.845	.859	.879	.908	.901	.905	.8188	.908	.742	.166	57.39	19
1.191	1.212	1.228	1.250	1.253	1.274	1.277	1.283	1.295	1.304	1.1388	1.304	.935	.369	65.52	20
1.297	1.279	1.269	1.249	1.233	1.213	1.176	1.157	1.135	1.100	1.2826	1.351	1.100	.251	69.18	21
.763	.762	.750	.740	.726	.705	.688	.670	.640	.623	.8287	1.087	.623	.464	57.64	22
.340	.333	.326	.320	.332	.343	.350	.351	.351	.347	.4015	.598	.320	.278	46.80	23
.182	.183	.182	.175	.170	.166	.162	.152	.154	.151	.2344	.351	.151	.200	42.53	24
.149	.152	.166	.165	.170	.172	.184	.194	.202	.208	**.1536**	.208	**.122**	.086	**40.50**	25
.451	.460	.475	.478	.477	.485	.487	.489	.491	.503	.3968	.503	.225	.278	46.67	26
.606	.605	.612	.597	.607	.613	.606	.606	.605	.615	.5758	.615	.509	.106	51.21	27
.689	.703	.721	.722	.738	.756	.770	.781	.792	.801	.6833	.801	.614	.187	53.94	28
.957	.969	.987	.996	1.003	1.016	1.031	1.038	1.042	1.039	.9288	1.042	.811	.231	60.18	29
1.177	1.194	1.205	1.204	1.212	1.204	1.220	1.219	1.221	1.214	1.1563	1.221	1.060	.161	65.95	30
1.197	1.191	1.187	1.181	1.165	1.162	1.152	1.141	1.133	1.120	1.2028	1.252	1.120	.132	67.15	31
.8736	.8759	.8784	.8768	.8753	.8746	.8753	.8736	.8691	**.8662**	.8751	.967	.771	.195	....	
58.78	58.83	58.88	58.86	58.81	58.78	58.81	58.78	58.66	**58.58**	58.81	61.15	56.17	4.95	58.82	

FEBRUARY, 1883.

TABLE XXIV.—*Atmospheric pressure (reduced to sea),*[a] *February,* 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H=29.000$ $\phi=+81^\circ\ 44'$ $\lambda=-64^\circ\ 45'=-4^h\ 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	1.113	1.107	1.111	1.108	1.133	1.148	1.145	1.164	1.168	1.180	1.181	1.187	1.201	1.208
2	1.053	1.021	.985	.951	.921	.883	.851	.814	.793	.771	.742	.722	.711	.716
3	.796	.807	.815	.836	.840	.841	.859	.847	.846	.846	.846	.818	.818	.818
4	.587	.551	.527	.535	.532	.542	.557	.538	.529	.521	.503	.488	.457	.458
5	.397	.404	.400	.418	.424	.442	.444	.453	.462	.478	.482	.487	.514	.535
6	.569	.548	.543	.529	.511	.489	.477	.464	.445	.438	.435	.405	.408	.395
7	.488	.549	.544	.586	.633	.661	.697	.719	.733	.763	.783	.800	.810	.828
8	.802	.752	.704	.623	.586	.522	.469	.449	.413	.372	.348	.322	.306	.278
9	.111	.115	.132	.131	.132	.152	.159	.191	.215	.249	.267	.283	.314	.319
10	.435	.437	.447	.456	.470	.484	.490	.494	.501	.521	.519	.521	.503	.501
11	.491	.493	.496	.498	.504	.504	.492	.486	.481	.470	.470	.468	.484	.484
12	.513	.510	.508	.514	.507	.499	.503	.487	.495	.486	.483	.470	.458	.455
13	.401	.404	.410	.407	.393	.392	.380	.362	.369	.354	.346	.350	.342	.335
14	.364	.360	.365	.368	.362	.366	.371	.368	.362	.380	.382	.390	.411	.433
15	.599	.607	.622	.640	.647	.667	.686	.703	.717	.729	.743	.751	.759	.769
16	.823	.834	.841	.847	.847	.840	.836	.846	.836	.838	.825	.822	.822	.816
17	.765	.763	.773	.760	.767	.758	.750	.753	.740	.727	.712	.680	.667	.634
18	.440	.429	.403	.407	.384	.365	.348	.327	.304	.272	.234	.209	.167	.135
19	.050	.047	.059	.047	.041	.025	.019	.021	.016	(28.996)	(28.994)	(28.984)	(28.968)	(28.974)
20	(28.992)	.004	.016	.029	.038	.056	.058	.064	.073	.079	.092	.111	.122	.152
21	.299	.310	.324	.327	.339	.347	.349	.360	.364	.373	.369	.379	.382	.396
22	.554	.564	.579	.603	.615	.631	.643	.656	.676	.686	.697	.706	.711	.730
23	.824	.819	.815	.816	.810	.802	.793	.792	.790	.777	.763	.749	.734	.723
24	.687	.701	.720	.756	.772	.810	.836	.870	.894	.919	.942	.963	.975	1.001
25	1.161	1.179	1.189	1.190	1.198	1.194	1.198	1.198	1.191	1.193	1.178	1.171	1.158	1.137
26	.963	.949	.922	.915	.908	.893	.888	.879	.884	.894	.885	.886	.889	.905
27	.889	.879	.861	.851	.841	.828	.802	.793	.780	.780	.772	.769	.756	.755
28	.619	.597	.569	.563	.530	.506	.490	.475	.459	.435	.418	.405	.389	.370
Means	**.5997**	.5979	.5957	.5968	.5959	.5945	.5925	.5919	.5906	.5902	.5861	.5820	**.5799**	.5807
Means in millimeters, 700 +	**51.83**	51.77	51.72	51.75	51.72	51.67	51.62	51.62	51.60	51.57	51.47	51.37	**51.32**	51.35

[a] By constant +.030.

[b] Mercurial barometer No. 229.

FEBRUARY, 1883.

TABLE XXIV.—*Atmospheric pressure (reduced to sea), February, 1883.*

B.	Gravity correction.
30	0.074
31	0.777

Washington mean time. Reduce to local mean time by adding 49^{m}

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000$ $\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700 +	Date.
1.209	1.217	1.210	1.212	1.205	1.203	1.190	1.161	1.134	1.098	**1.1664**	**1.217**	1.107	.110	**66.20**	1
.720	.729	.740	.750	.748	.750	.754	.770	.799	.787	.8117	.053	.711	.342	57.21	2
.809	.801	.793	.778	.781	.754	.742	.687	.698	.602	.7949	.859	.602	.257	56.78	3
.458	.447	.450	.432	.419	.419	.417	.417	.408	.409	.4834	.587	.408	.179	48.86	4
.560	.587	.598	.629	.623	.608	.609	.591	.596	.564	.5117	.629	.397	.232	49.62	5
.394	.391	.384	.382	.377	.386	.393	.419	.439	.456	.4449	.569	.377	.192	47.89	6
.846	.853	.865	.882	.870	.859	.870	.876	.844	.818	.7574	.882	.488	.394	55.82	7
.297	.279	.284	.255	.236	.226	.202	.177	.164	.138	.3835	.802	.138	.664	46.34	8
.366	.389	.378	.401	.405	.411	.417	.424	.410	.435	.2836	.435	.111	.324	43.80	9
.506	.509	.497	.510	.508	.499	.500	.500	.487	.493	.4912	.521	.436	.085	49.06	10
.490	.496	.496	.499	.501	.508	.516	.518	.524	.520	.4954	.524	.468	.056	49.16	11
.453	.445	.447	.435	.427	.420	.412	.415	.414	.414	.4654	.514	.412	.102	48.40	12
.342	.345	.338	.344	.332	.342	.338	.348	.349	.369	.3622	.410	.332	.078	45.78	13
.454	.471	.496	.506	.527	.543	.563	.573	.576	.576	.4403	.576	.360	.216	47.76	14
.778	.785	.793	.796	.804	.813	.815	.816	.820	.815	.7364	.820	.599	.221	55.28	15
.820	.810	.803	.798	.799	.792	.787	.780	.778	.760	.8169	.847	.760	.087	57.34	16
.617	.624	.578	.576	.554	.536	.524	.496	.478	.447	.6533	.773	.447	.326	53.18	17
.112	.107	.077	.091	.070	.097	.087	.073	.074	.068	.2200	.440	.068	.372	42.17	18
(28.974)	(28.984)	(28.988)	(28.990)	(28.985)	(28.982)	(28.972)	(28.980)	(28.984)	(28.990)	**.0029**	.059	**(28.968)**	.091	**36.67**	19
.176	.199	.218	.235	.242	.249	.260	.260	.275	.288	.1370	.288	28.992	.296	40.07	20
.411	.420	.427	.434	.441	.453	.471	.495	.516	.536	.3968	.536	.299	.237	46.67	21
.740	.749	.760	.771	.779	.791	.802	.811	.810	.819	.7035	.819	.554	.265	54.47	22
.719	.710	.697	.693	.685	.677	.669	.671	.678	.674	.7450	.824	.669	.155	55.51	23
1.025	1.043	1.056	1.075	1.097	1.109	1.129	1.147	1.149	1.155	.9513	1.155	.687	.468	60.75	24
1.127	1.121	1.106	1.078	1.061	1.036	1.023	1.012	.998	.969	1.1278	1.198	.969	.229	65.23	25
.909	.918	.912	.920	.913	.915	.911	.913	.907	.893	.9071	.963	.879	.084	59.63	26
.754	.757	.757	.745	.725	.711	.707	.691	.669	.644	.7715	.889	.644	.245	56.19	27
.368	.371	.371	.372	.380	.408	.414	.458	.481	.505	.4564	.619	.368	.251	48.17	28
.5869	.5913	.5900	.5925	.5891	.5892	.5891	.5885	.5878	.5801	.5899	.707	.473	.234	------	
51.50	51.60	51.57	51.62	51.55	51.55	51.55	51.52	51.52	**51.32**	51.57	54.55	48.60	5.94	51.57	

MARCH, 1883.

TABLE XXV.—*Atmospheric pressure* (*reduced to sea*)[a], *March*, 1883.

Washington mean time. Reduce to local mean time by adding 49^{m}

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.529	.557	.587	.607	.624	.644	.675	.669	.688	.686	.673	.668	.653	.656
2	.653	.654	.675	.699	.718	.743	.748	.778	.816	[illegible]	.869	.905	.935	.970
3	1.192	1.196	1.210	1.222	1.218	1.211	1.208	1.194	1.176	1.158	1.137	1.107	1.084	1.055
4	.975	.984	1.005	1.026	1.046	1.061	1.074	1.094	1.118	1.140	1.158	1.176	1.194	1.219
5	1.542	1.569	1.603	1.635	1.654	1.693	1.716	1.748	1.758	1.763	1.779	1.771	1.764	1.759
6	1.492	1.490	1.469	1.434	1.404	1.380	1.360	1.342	1.279	1.249	1.193	1.151	1.159	1.112
7	1.136	1.132	1.125	1.120	1.122	1.143	1.128	1.132	1.113	1.102	1.192	1.101	1.077	1.051
8	.755	.725	.730	.763	.795	.813	.788	.813	.878	.932	.971	1.003	1.079	1.109
9	1.388	1.398	1.402	1.416	1.444	1.466	1.494	1.508	1.522	1.535	1.541	1.551	1.554	1.551
10	1.424	1.406	1.401	1.389	1.388	1.374	1.362	1.340	1.328	1.312	1.297	1.263	1.248	1.226
11	.899	.866	.828	.810	.784	.766	.757	.736	.729	.728	.745	.761	.761	.799
12	1.093	1.081	1.078	1.055	1.025	1.029	1.019	1.007	.982	.946	.903	.854	.817	.790
13	.613	.609	.604	.629	.625	.633	.628	.629	.619	.619	.612	.596	.582	.552
14	.444	.415	.392	.368	.351	.370	.384	.389	.402	.402	.430	.430	.450	.474
15	.609	.640	.666	.691	.714	.733	.750	.773	.766	.773	.806	.827	.830	.821
16	1.086	1.108	1.119	1.135	1.136	1.126	1.108	1.104	1.092	1.080	1.062	1.051	1.065	1.043
17	1.065	1.037	1.028	1.014	1.006	.976	.946	.897	.867	.841	.800	.761	.753	.747
18	.774	.778	.747	.762	.788	.790	.796	.821	.833	.861	.901	.915	.945	.942
19	1.111	1.113	1.099	1.103	1.103	1.104	1.094	1.090	1.073	1.068	1.059	1.040	1.030	1.023
20	.871	.865	.853	.838	.833	.839	.847	.863	.865	.870	.896	.901	.916	.933
21	1.069	1.070	1.067	1.068	1.063	1.058	1.048	1.032	1.006	.974	.935	.902	.848	.788
22	.391	.385	.392	.425	.448	.491	.530	.584	.616	.641	.659	.678	.698	.729
23	1.025	1.064	1.111	1.152	1.193	1.228	1.270	1.300	1.339	1.374	1.409	1.436	1.440	1.478
24	1.342	1.303	1.279	1.248	1.221	1.205	1.186	1.187	1.172	1.182	1.171	1.179	1.194	1.216
25	1.250	1.257	1.267	1.281	1.288	1.296	1.316	1.318	1.337	1.356	1.370	1.388	1.410	1.431
26	1.468	1.459	1.451	1.438	1.441	1.437	1.434	1.422	1.409	1.408	1.413	1.418	1.419	1.418
27	1.332	1.317	1.306	1.292	1.272	1.256	1.230	1.208	1.195	1.190	1.178	1.172	1.162	1.163
28	1.127	1.130	1.139	1.145	1.158	1.159	1.171	1.172	1.173	1.180	1.189	1.194	1.198	1.204
29	1.154	1.151	1.147	1.139	1.144	1.132	1.121	1.111	1.096	1.085	1.090	1.083	1.080	1.095
30	1.141	1.149	1.155	1.164	1.186	1.191	1.201	1.200	1.209	1.206	1.199	1.202	1.197	1.198
31	1.138	1.126	1.121	1.123	1.111	1.101	1.087	1.076	1.052	1.028	1.006	.992	.977	.962
Means	1.0351	1.0334	1.0341	1.0384	1.0420	1.0467	1.0476	1.0496	1.0486	1.0497	1.0498	1.0476	1.0490	1.0488
Means in millimeters, 700+	62.88	62.83	62.85	62.95	63.05	63.18	63.20	63.26	63.23	63.26	63.26	63.20	63.23	63.23

[a] By constant +.030.

[b] Mercurial barometer No. 229.

MARCH, 1883.

TABLE XXV.—*Atmospheric pressure (reduced to sea), March, 1883.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700 +	Date.
.665	.669	.668	.662	.665	.662	.659	.657	.655	.660	.6474	.688	.529	.159	53.02	1
.991	1.030	1.064	1.089	1.116	1.142	1.166	1.174	1.183	1.184	.9231	1.184	.653	.531	60.03	2
1.036	1.033	1.018	.999	.991	.977	.965	.967	.976	.979	1.0962	1.222	.965	.257	64.42	3
1.236	1.263	1.291	1.320	1.345	1.375	1.405	1.443	1.477	1.495	1.2050	1.495	.975	.520	67.20	4
1.765	1.750	1.719	1.695	1.666	1.643	1.606	1.577	1.551	1.525	**1.6771**	**1.779**	1.525	.254	**79.18**	5
1.114	1.179	1.195	1.161	1.149	1.154	1.130	1.127	1.136	1.140	1.2500	1.492	1.112	.380	68.34	6
1.043	1.024	1.000	.947	.924	.890	.847	.847	.807	.783	1.0286	1.136	.783	.353	62.72	7
1.149	1.186	1.234	1.268	1.299	1.322	1.348	1.371	1.378	1.390	1.0458	1.390	.725	.665	63.15	8
1.558	1.547	1.540	1.534	1.512	1.507	1.477	1.471	1.449	1.434	1.4916	1.558	1.388	.170	74.48	9
1.198	1.178	1.157	1.134	1.087	1.070	1.038	1.002	.977	.939	1.2308	1.424	.939	.485	67.86	10
.871	.917	.962	1.000	1.033	1.061	1.087	1.087	1.096	1.092	.8823	1.096	.728	.368	58.99	11
.760	.746	.718	.688	.677	.662	.648	.642	.615	.614	.8520	1.093	.614	.479	58.23	12
.522	.535	.505	.498	.482	.470	.494	.469	.456	.438	.5591	.633	.438	.195	50.79	13
.490	.487	.492	.499	.519	.570	.579	.605	.621	.616	**.4658**	.621	**.351**	.270	**48.42**	14
.838	.885	.910	.981	.979	.983	1.020	1.032	1.054	1.069	.8396	1.069	.609	.460	57.92	15
1.046	1.046	1.056	1.054	1.039	1.033	1.070	1.073	1.058	1.065	1.0773	1.136	1.033	.103	63.94	16
.746	.751	.758	.799	.812	.815	.817	.795	.793	.802	.8594	1.065	.746	.319	58.41	17
.953	.949	.955	.976	.970	.997	1.030	1.031	1.041	1.080	.9015	1.080	.747	.333	59.50	18
1.024	1.020	1.013	1.003	.983	.946	.940	.918	.905	.886	1.0312	1.113	.886	.227	62.78	19
.957	.968	.993	1.004	1.018	1.032	1.046	1.052	1.053	1.060	.9322	1.060	.833	.227	60.26	20
.758	.678	.638	.591	.536	.499	.461	.424	.396	.402	.8046	1.070	.396	.674	57.04	21
.744	.744	.772	.795	.812	.843	.872	.907	.935	.973	.6693	.973	.385	.588	53.58	22
1.490	1.494	1.503	1.506	1.489	1.477	1.477	1.454	1.414	1.383	1.3544	1.506	1.025	.481	70.98	23
1.214	1.216	1.215	1.230	1.234	1.230	1.224	1.235	1.240	1.247	1.2238	1.342	1.171	.171	67.67	24
1.459	1.479	1.485	1.488	1.496	1.493	1.489	1.489	1.487	1.475	1.3919	1.496	1.250	.246	71.94	25
1.423	1.427	1.407	1.411	1.407	1.396	1.379	1.372	1.354	1.345	1.4148	1.468	1.345	.123	72.53	26
1.151	1.155	1.147	1.138	1.135	1.128	1.120	1.116	1.125	1.126	1.1922	1.332	1.116	.216	66.86	27
1.215	1.214	1.212	1.209	1.200	1.194	1.192	1.184	1.173	1.163	1.1790	1.215	1.127	.088	66.53	28
1.095	1.109	1.114	1.116	1.118	1.121	1.117	1.121	1.127	1.134	1.1167	1.154	1.080	.074	64.96	29
1.207	1.200	1.197	1.188	1.180	1.175	1.166	1.162	1.150	1.151	1.1822	1.209	1.141	.068	66.61	30
.950	.926	.914	.902	.879	.859	.842	.814	.802	.801	.9829	1.138	.801	.337	61.56	31
1.0538	1.0582	1.0597	**1.0608**	1.0565	1.0557	1.0552	1.0522	1.0479	1.0468	1.0486	1.201	.884	.317	-------	
63.36	63.46	63.51	**63.54**	63.41	63.41	63.39	63.31	63.20	63.18	63.23	67.10	59.04	8.05	63.22	

APRIL, 1883.

TABLE XXVI.—*Atmospheric pressure* (*reduced to sea*),[a] *April*, 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.768	.759	.744	.738	.721	.710	.682	.700	.684	.666	.658	.641	.632	.623
2	.575	.581	.580	.578	.586	.592	.589	.592	.594	.597	.604	.599	.608	.619
3	.596	.591	.575	.578	.573	.569	.560	.555	.539	.531	.526	.510	.499	.480
4	.330	.318	.319	.312	.318	.323	.316	.320	.330	.347	.355	.371	.374	.392
5	.511	.522	.532	.535	.540	.540	.544	.550	.562	.562	.567	.574	.581	.589
6	.675	.674	.680	.681	.682	.672	.672	.671	.673	.662	.651	.658	.654	.656
7	.684	.697	.709	.722	.738	.750	.762	.783	.802	.814	.835	.859	.884	.904
8	1.092	1.108	1.121	1.126	1.125	1.124	1.108	1.111	1.107	1.099	1.086	1.077	1.062	1.047
9	.895	.876	.862	.836	.818	.810	.787	.774	.749	.726	.712	.705	.705	.696
10	.742	.747	.751	.760	.772	.790	.806	.819	.839	.853	.860	.876	.893	.903
11	.912	.905	.893	.879	.856	.836	.805	.789	.771	.752	.739	.722	.709	.689
12	.693	.702	.724	.740	.752	.770	.790	.811	.828	.855	.873	.885	.895	.910
13	1.025	1.036	1.037	1.047	1.049	1.049	1.044	1.041	1.032	1.022	1.012	1.014	1.006	1.001
14	.957	.961	.964	.973	.976	.985	.985	.999	1.006	1.017	1.025	1.039	1.049	1.084
15	1.229	1.236	1.247	1.256	1.266	1.262	1.260	1.272	1.275	1.270	1.275	1.277	1.277	1.288
16	1.288	1.291	1.281	1.278	1.277	1.272	1.260	1.254	1.248	1.235	1.228	1.224	1.243	1.242
17	1.273	1.278	1.271	1.273	1.277	1.271	1.270	1.260	1.264	1.255	1.244	1.241	1.232	1.226
18	1.179	1.175	1.162	1.155	1.144	1.132	1.131	1.121	1.114	1.107	1.098	1.094	1.093	1.096
19	1.095	1.101	1.104	1.110	1.113	1.112	1.105	1.119	1.122	1.114	1.108	1.100	1.087	1.082
20	.979	.965	.945	.923	.910	.892	.900	.894	.893	.895	.896	.902	.909	.907
21	.914	.926	.934	.940	.935	.947	.953	.964	.972	.979	.980	.993	.999	1.006
22	1.199	1.211	1.243	1.266	1.288	1.309	1.323	1.343	1.361	1.382	1.395	1.409	1.426	1.456
23	1.643	1.653	1.655	1.666	1.663	1.606	1.673	1.686	1.684	1.682	1.679	1.674	1.670	1.669
24	1.619	1.611	1.600	1.591	1.592	1.580	1.574	1.561	1.548	1.542	1.529	1.511	1.507	1.494
25	1.413	1.419	1.416	1.412	1.403	1.406	1.399	1.392	1.378	1.378	1.367	1.356	1.353	1.358
26	1.398	1.417	1.406	1.411	1.406	1.404	1.394	1.399	1.364	1.365	1.349	1.330	1.330	1.303
27	1.135	1.143	1.142	1.147	1.134	1.125	1.127	1.129	1.132	1.136	1.138	1.132	1.135	1.143
28	1.225	1.246	1.260	1.278	1.298	1.311	1.321	1.337	1.353	1.365	1.368	1.372	1.387	1.390
29	1.439	1.458	1.481	1.489	1.504	1.518	1.532	1.547	1.561	1.569	1.585	1.600	1.616	1.624
30	1.662	1.652	1.645	1.632	1.616	1.602	1.589	1.563	1.545	1.529	1.514	1.500	1.478	1.465
Means	1.0382	1.0420	1.0428	1.0444	1.0445	1.0443	1.0420	1.0452	1.0443	1.0435	1.0419	1.0415	1.0431	1.0447
Means in millimeters, 700+	62.95	63.05	63.08	63.10	63.10	63.10	63.05	63.13	63.10	63.10	63.05	63.05	63.08	63.13

[a] By constant + .030.

[b] Mercurial barometer No. 229.

APRIL, 1883.

TABLE XXVI.—*Atmospheric pressure (reduced to sea), April,* 1883.

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700+	Date.
.613	.611	.599	.593	.578	.576	.580	.587	.580	.569	.650[illegible]	.768	.569	.199	53.10	1
.621	.624	.628	.627	.627	.627	.627	.622	.617	.596	.6046	.628	.575	.053	51.96	2
.463	.452	.444	.434	.414	.381	.374	.367	.350	.333	.4872	.596	.333	.263	48.96	3
.415	.417	.439	.435	.455	.475	.481	.497	.503	.503	**.3894**	.503	**.312**	.191	**46.47**	4
.600	.612	.617	.627	.633	.649	.654	.661	.671	.672	.5877	.672	.511	.161	51.52	5
.651	.647	.662	.655	.654	.660	.664	.673	.674	.687	.6662	.687	.647	.040	53.50	6
.921	.951	.965	.992	1.003	1.026	1.034	1.054	1.063	1.079	.8763	1.079	.684	.395	58.83	7
1.041	1.020	1.008	.997	.988	.973	.966	.947	.934	.913	1.0492	1.126	.913	.213	63.23	8
.689	.687	.690	.699	.702	.707	.717	.728	.728	.729	.7511	.895	.687	.208	55.67	9
.909	.923	.924	.926	.933	.933	.934	.932	.934	.930	.8620	.934	.742	.192	58.48	10
.673	.669	.664	.660	.654	.654	.647	.668	.669	.682	.7457	.912	.647	.265	55.53	11
.922	.934	.939	.952	.963	.978	.987	.988	.997	1.006	.8706	1.006	.693	313	58.71	12
.995	.982	.980	.971	.966	.966	.958	.952	.953	.957	1.0040	1.049	.952	097	62.09	13
1.101	1.111	1.126	1.140	1.154	1.167	1.177	1.177	1.199	1.218	1.0662	1.218	.957	.261	63.66	14
1.289	1.293	1.290	1.294	1.302	1.300	1.289	1.293	1.289	1.284	1.2755	1.302	1.229	.073	68.99	15
1.243	1.250	1.254	1.252	1.257	1.255	1.262	1.268	1.272	1.278	1.2588	1.291	1.224	.067	68.57	16
1.225	1.231	1.214	1.220	1.209	1.215	1.197	1.200	1.193	1.186	1.2385	1.278	1.186	.092	68.03	17
1.094	1.102	1.107	1.108	1.100	1.097	1.099	1.107	1.098	1.089	1.1169	1.179	1.089	.090	64.96	18
1.075	1.069	1.065	1.056	1.051	1.040	1.023	1.010	1.001	.981	1.0768	1.122	.981	.141	63.94	19
.918	.919	.916	.911	.900	.893	.893	.896	.905	.904	.9110	.979	.892	.087	59.73	20
1.017	1.038	1.045	1.066	1.069	1.087	1.110	1.132	1.144	1.168	1.0132	1.168	.914	.254	62.32	21
1.484	1.508	1.530	1.554	1.573	1.590	1.607	1.616	1.621	1.632	1.4302	1.632	1.199	.433	72.91	22
1.669	1.669	1.664	1.656	1.657	1.650	1.647	1.650	1.634	1.627	**1.6619**	**1.686**	1.627	.059	**78.80**	23
1.484	1.476	1.466	1.458	1.454	1.447	1.144	1.441	1.427	1.426	1.5159	1.619	1.426	.193	75.09	24
1.360	1.368	1.366	1.373	1.361	1.377	1.384	1.389	1.387	1.396	1.3838	1.419	1.353	.066	71.74	25
1.284	1.276	1.257	1.245	1.223	1.208	1.188	1.186	1.175	1.171	1.3120	1.417	1.171	.246	69.91	26
1.142	1.151	1.155	1.166	1.169	1.177	1.188	1.193	1.204	1.218	1.1525	1.218	1.125	.093	65.[illegible]5	27
1.404	1.409	1.416	1.417	1.418	1.411	1.419	1.422	1.427	1.435	1.3620	1.435	1.225	.210	71.[illegible]8	28
1.639	1.652	1.660	1.664	1.671	1.672	1.676	1.673	1.671	1.663	1.5902	1.676	1.439	.237	76.97	29
1.450	1.430	1.414	1.394	1.383	1.364	1.351	1.340	1.323	1.308	1.4895	1.662	1.308	.354	74.43	30
1.0464	1.0493	1.0501	1.0514	1.0507	1.0518	1.0529	**1.0556**	1.0548	1.0547	1.0466	1.138	.954	.185	----------	
63.15	63.23	63.26	63.29	63.29	63.31	63.34	**63.41**	63.39	63.39	63.18	65.49	6c.82	4.70	63.17	

MAY, 1883.

TABLE XXVII.—*Atmospheric pressure (reduced to sea)*,[a] *May*, 1883.

B.	Gravity correction.
28	0.070
29	0.072

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	1.283	1.271	1.262	1.242	[illegible]	1.195	1.192	1.165	1.140	1.123	1.100	1.082	1.063	1.047
2	.958	.957	.950	.940	.941	.934	.927	.934	.929	.924	.922	.925	.935	.947
3	1.091	1.096	1.103	1.111	1.118	1.120	1.104	1.124	1.124	1.124	1.126	1.118	1.104	1.109
4	1.146	1.149	1.155	1.158	1.159	1.163	1.170	1.169	1.193	1.189	1.184	1.195	1.198	1.203
5	1.256	1.261	1.265	1.272	1.272	1.266	1.249	1.255	1.256	1.232	1.232	1.218	1.210	1.206
6	1.232	1.247	1.262	1.274	1.289	1.298	1.301	1.310	1.325	1.338	1.351	1.358	1.368	1.389
7	1.561	1.568	1.586	1.597	1.607	1.608	1.607	1.602	1.608	1.609	1.611	1.606	1.605	1.605
8	1.650	1.649	1.657	1.657	1.654	1.649	1.644	1.642	1.646	1.643	1.644	1.641	1.647	1.654
9	1.677	1.672	1.669	1.659	1.651	1.641	1.629	1.615	1.598	1.580	1.566	1.545	1.529	1.514
10	1.402	1.407	1.413	1.409	1.408	1.408	1.411	1.411	1.399	1.395	1.387	1.383	1.386	1.386
11	1.364	1.366	1.362	1.358	1.350	1.347	1.334	1.323	1.312	1.298	1.283	1.264	1.243	1.232
12	1.099	1.108	1.111	1.121	1.127	1.129	1.121	1.131	1.130	1.128	1.117	1.116	1.119	1.119
13	.989	.970	.955	.941	.925	.911	.883	.862	.840	.814	.793	.769	.765	.750
14	.775	.795	.811	.832	.844	.864	.880	.903	.917	.932	.952	.954	.962	.974
15	1.011	1.003	.999	.981	.970	.962	.937	.914	.905	.883	.861	.838	.824	.808
16	.757	.765	.769	.777	.779	.789	.794	.800	.813	.825	.826	.839	.843	.846
17	.926	949	.955	.969	.975	.989	.994	1.007	1.025	1.038	1.045	1.052	1.066	1.074
18	1.191	1.203	1.209	1.219	1.225	1.233	1.234	1.238	1.240	1.248	1.248	1.260	1.271	1.277
19	1.260	1.259	1.252	1.246	1.236	1.233	1.223	1.213	1.198	1.184	1.165	1.149	1.133	1.120
20	1.031	1.033	1.031	1.023	1.017	1.016	1.001	.993	.981	.968	.947	.938	.918	.897
21	.666	.659	.650	.646	.651	.647	.640	.635	.642	.645	.647	.647	.652	.668
22	.729	.723	.715	.709	.695	.684	.673	.661	.647	.637	.627	.616	.605	.592
23	.549	.552	.557	.561	.561	.560	.558	.558	.556	.560	.571	.581	.596	.607
24	.763	.772	.783	.796	.806	.810	.817	.824	.830	.835	.836	.839	.845	.846
25	.861	.862	.869	.866	.867	.859	.855	.846	.841	.834	.829	.827	.824	.818
26	.811	.811	.816	.819	.816	.818	.816	.813	.813	.806	.805	.801	.798	.795
27	.777	.777	.778	.779	.773	.773	.771	.766	.773	.765	.759	.756	.763	.771
28	.778	.781	.785	.784	.779	.776	.767	.749	.737	.719	.696	.680	.670	.669
29	.684	.687	.690	.701	.705	.710	.706	.695	.695	.677	.678	.660	.646	.631
30	.475	.474	.486	.487	.488	.512	.517	.533	.538	.536	.549	.554	.544	.550
31	.548	.553	.572	.589	.600	.613	.615	.637	.654	.680	.680	.677	.675	.676
Means	1.0129	1.0122	1.0154	1.0169	1.0165	1.0167	1.0119	1.0106	1.0098	1.0055	1.0012	.9964	.9936	.9929
Means in millimeters, 700+	62.32	62.29	62.37	62.42	62.39	62.42	62.29	62.27	62.24	62.14	62.02	61.88	61.83	61.81

[a] By constant +.030. [b] Mercurial barometer No. 229.

MAY, 1883.

TABLE XXVII.—*Atmospheric pressure (reduced to sea), May,* 1883.

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000+$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in *mm.*, 700+	Date.
1.027	1.021	1.014	1.002	.994	.981	.974	.969	.965	.959	1.0957	1.283	.959	.324	64.42	1
.957	.967	.979	.995	1.010	1.029	[illegible]	1.062	1.072	1.083	.9716	1.083	.942	.101	61.27	2
1.109	1.117	1.119	1.122	1.121	1.120	1.125	1.131	1.134	1.140	1.1171	1.140	1.091	.049	64.96	3
1.204	1.213	1.222	1.228	1.238	1.241	1.246	1.246	1.252	1.255	1.1990	1.255	1.146	.109	67.04	4
1.205	1.209	1.213	1.210	1.207	1.211	1.21[illegible]	1.212	1.217	1.227	1.2326	1.272	1.205	.067	67.91	5
1.411	1.432	1.453	1.466	1.485	[illegible]	1.505	1.521	1.539	1.542	1.3830	1.542	1.232	.310	71.72	6
1.608	1.613	1.630	1.634	1.636	[illegible]	[illegible]	1.639	1.645	1.645	1.6126	1.645	1.561	.084	77.56	7
1.662	1.669	1.671	1.681	1.684	1.685	1.687	1.687	1.687	1.682	**1.6613**	**1.687**	1.641	.046	**78.78**	8
1.504	1.486	1.472	1.456	1.452	1.441	1.432	1.427	1.412	1.405	1.5430	1.677	1.405	.272	75.78	9
1.387	1.384	1.382	1.382	1.383	1.384	1.378	1.371	1.364	1.369	1.3912	1.413	1.364	.049	71.92	10
1.213	1.192	1.179	1.163	1.150	[illegible]	1.118	1.106	1.101	1.093	1.2452	1.366	1.093	.273	68.21	11
1.112	1.111	1.106	1.097	1.081	1.070	1.058	1.038	1.019	1.000	1.0987	1.131	1.000	.131	64.50	12
.746	.746	.750	.747	.746	.750	.753	.747	.751	.763	.8194	.989	.746	.243	57.39	13
.977	.987	1.011	1.010	1.031	1.035	1.028	1.028	1.027	1.016	.9394	1.035	.775	.260	60.44	14
.791	.782	.766	.761	.744	.743	.744	.745	.748	.750	.8529	1.011	.743	.268	58.26	15
.853	.861	.887	.872	.883	.887	.897	.903	.909	.917	.8371	.917	.757	.160	57.85	16
1.094	1.103	1.110	1.121	1.139	1.142	1.151	1.161	1.168	1.181	1.0598	1.181	.926	.255	63.51	17
1.283	1.285	1.293	1.287	1.287	1.290	1.284	1.283	1.269	1.267	1.2552	1.293	1.191	.102	68.47	18
1.106	1.102	1.084	1.076	1.064	1.063	1.049	1.049	1.040	1.039	1.1476	1.260	1.039	.221	65.74	19
.877	.863	.842	.816	.787	.767	.743	.718	.702	.679	.8995	1.033	.679	.354	59.45	20
.682	.698	.706	.713	.721	.732	.731	.726	.726	.729	.6775	.732	.635	.097	53.80	21
.586	.581	.575	.569	.564	.561	.557	.552	.553	.550	.6234	.729	.550	.179	52.41	22
.625	.642	.654	.669	.684	.695	.707	.719	.739	.750	.6171	.750	.549	.201	52.26	23
.854	.851	.855	.852	.852	.855	.854	.855	.855	.854	.8308	.855	.763	.092	57.70	24
.815	.813	.812	.809	.810	.810	.808	.809	.804	.802	.8312	.869	.802	.067	57.70	25
.801	.796	.796	.794	.794	.787	.791	.784	.785	.781	.8020	.819	.781	.038	56.96	26
.779	.781	.782	.789	.783	.787	.790	.788	.790	.789	.7766	.790	.756	.034	56.32	27
.667	.666	.661	.669	.671	.675	.665	.675	.675	.677	.7113	.785	.661	.124	54.65	28
.622	.599	.592	.570	.538	.522	.511	.496	.476	.479	.6238	.710	.476	.234	52.43	29
.564	.579	.565	.562	.560	.558	.556	.554	.559	.549	**.5354**	.579	**.474**	.105	**50.18**	30
.670	.676	.691	.711	.709	.716	.724	.713	.706	.697	.6576	.724	.548	.176	53.30	31
.9936	.9944	.9959	.9946	.9938	.9936	.9922	.9908	.9900	**.9893**	1.0015	1.082	.918	.164	....	
61.83	61.83	61.88	61.84	61.86	61.82	61.79	61.78	61.76	**61.73**	62.04	64.07	59.90	4.16	62.03	

JUNE, 1883.

TABLE XXVIII.—*Atmospheric pressure (reduced to sea)*,[a] *June*, 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Barometer[b] above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	.695	.689	.691	.686	.682	.679	.675	.672	.674	.672	673	.676	.679	.686
2	.704	.678	.654	.614	.598	.589	.556	.527	.505	.505	.493	.503	.504	.510
3	.533	.542	.537	.538	.554	.533	.522	.527	.514	.509	.512	.514	.514	.508
4	.560	.570	.585	.598	.612	.620	.623	.624	.622	.632	.629	.622	.622	.618
5	.619	.633	.646	.649	.655	.660	.666	.663	.667	.672	.673	.670	.678	.678
6	.711	.705	.699	.706	.699	.700	.692	.677	.671	.669	.661	.655	.646	.642
7	.617	.620	.607	.609	.610	.610	.619	.616	.616	.616	.611	.605	.611	.599
8	.627	.632	.628	.619	.619	.615	.602	.595	.593	.590	.582	.580	.581	.591
9	.606	.599	.580	.570	.562	.550	.526	.514	.495	.466	.455	.457	.448	.454
10	.512	.525	.534	.550	.563	.575	.580	.604	.611	.613	.625	.633	.637	.643
11	.697	.709	.720	.721	.734	.746	.742	.739	.750	.752	.757	.759	.767	.764
12	.814	.816	.831	.833	.838	.842	.844	.841	.843	.849	.856	.859	.858	.874
13	1.006	1.022	1.032	1.046	1.061	1.070	1.087	1.096	1.111	1.126	1.137	1.150	1.166	1.169
14	1.197	1.189	1.181	1.178	1.168	1.162	1.160	1.141	1.135	1.129	1.119	1.107	1.089	1.080
15	1.014	1.024	1.025	1.034	1.037	1.036	1.032	1.041	1.045	1.045	1.045	1.040	1.041	1.036
16	.846	.823	.803	.798	.776	.763	.740	.715	.701	.721	.703	.716	.722	.734
17	.913	.925	.948	.953	.959	.955	.969	.970	.971	.981	.972	.981	.981	.979
18	.999	.996	.994	.991	.994	1.005	1.008	1.002	.998	.993	.971	.974	.975	.973
19	.976	.984	.986	.984	.984	.984	.985	.978	.976	.977	.968	.967	.973	.971
20	.942	.950	.950	.955	.953	.951	.945	.939	.942	.933	.933	.924	.932	.934
21	.975	.979	.999	.998	1.001	1.008	1.015	1.020	1.029	1.028	1.031	1.042	1.045	1.050
22	1.070	1.074	1.077	1.080	1.083	1.090	1.091	1.095	1.103	1.110	1.113	1.120	1.131	1.130
23	1.201	1.201	1.203	1.205	1.199	1.191	1.185	1.175	1.168	1.156	1.136	1.127	1.108	1.089
24	.791	.778	.752	.732	.703	.680	.672	.640	.609	.590	.591	.600	.600	.620
25	.696	.712	.707	.717	.733	.751	.765	.776	.779	.783	.802	.807	.820	.829
26	.855	.862	.868	.869	.865	.865	.867	.868	.874	.877	.885	.879	.889	.894
27	.935	.939	.952	.958	.964	.973	.978	.983	.993	.991	.990	.991	.995	.995
28	.982	.975	.967	.962	.955	.951	.937	.925	.912	.901	.890	.877	.871	.860
29	.836	.829	.825	.816	.811	.810	.795	.792	.790	.789	.798	.806	.810	.809
30	.892	.894	.895	.898	.903	.911	.915	.912	.914	.918	.910	.917	.906	.914
Means	.8274	.8291	.8292	.8289	.8292	.8288	.8266	.8221	.8201	.8195	.8173	.8186	.8199	.8211
Means in millimeters, 700 +	57.59	57.64	57.64	57.64	57.64	57.64	57.59	57.46	57.41	57.41	57.34	57.39	57.41	57.44

[a] By constant +.030.

[b] Mercurial barometer No. 229.

B.	Gravity correction.
30	0.074
31	0.077

JUNE, 1883.

TABLE XXVIII.—*Atmospheric pressure (reduced to sea), June, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700 +	Date.
.698	.707	.715	.718	.718	.730	.730	.722	.724	.697	.6953	.730	.672	.058	54.24	1
.523	.520	.527	.529	.529	.530	.530	.529	.530	.542	.5513	.704	.493	.211	50.59	2
.507	.517	.518	.523	.524	.528	.531	.533	.538	.550	.5261	.554	.507	.047	49.94	3
.619	.619	.616	.610	.607	.607	.607	.609	.607	.613	.6105	.632	.560	.072	52.08	4
.687	.696	.706	.708	.712	.716	.716	.718	.717	.716	.6800	.718	.619	.099	53.86	5
.641	.645	.646	.639	.632	.634	.636	.633	.623	.618	.6617	.711	.618	.093	53.40	6
.614	.626	.632	.632	.630	.634	.640	.641	.641	.633	.6204	.641	.599	.042	52.33	7
.596	.604	.612	.614	.624	.628	.630	.628	.622	.620	.6097	.632	.580	.052	52.08	8
.457	.469	.468	.467	.479	.486	.489	.492	.500	.506	**.5040**	.606	**.448**	.158	**49.39**	9
.650	.656	.656	.658	.660	.668	.670	.679	.688	.690	.6200	.690	.512	.178	52.33	10
.770	.780	.782	.783	.792	.797	.795	.800	.801	.806	.7610	.806	.697	.109	55.92	11
.883	.893	.902	.918	.933	.942	.954	.968	.984	.999	.8822	.999	.814	.185	58.99	12
1.181	1.198	1.187	1.199	1.211	1.215	1.218	1.215	1.211	1.205	**1.1383**	**1.218**	1.006	.212	**65.49**	13
1.077	1.068	1.052	1.033	1.029	1.018	1.016	1.008	1.009	1.002	1.0978	1.197	1.002	.195	64.47	14
1.021	1.017	.991	.979	.971	.960	.931	.914	.888	.872	1.0016	1.045	.872	.173	62.04	15
.743	.758	.786	.799	.817	.832	.855	.858	.875	.894	.7820	.894	.701	.193	56.45	16
.986	.987	.988	.988	.989	.990	.993	.999	.996	.998	.9738	.999	.913	.086	61.32	17
.977	.980	.980	.987	.981	.954	.954	.981	.984	.980	.9846	1.008	.954	.054	61.61	18
.970	.966	.964	.961	.954	.954	.949	.945	.945	.948	.9687	.986	.945	.041	61.20	19
.936	.938	.941	.942	.945	.950	.951	.954	.959	.965	.9443	.965	.924	.041	60.56	20
1.059	1.055	1.060	1.064	1.059	1.061	1.064	1.065	1.064	1.065	1.0348	1.065	.975	.090	62.88	21
1.131	1.131	1.154	1.163	1.172	1.178	1.192	1.197	1.196	1.198	1.1268	1.198	1.070	.128	65.21	22
1.064	1.034	1.008	.994	.959	.930	.896	.863	.841	.826	1.0733	1.205	.826	.379	63.84	23
.619	.622	.631	.641	.661	.668	.671	.681	.683	.687	.6638	.791	.590	.201	53.45	24
.840	.841	.852	.853	.854	.856	.857	.856	.851	.853	.7996	.857	.696	.161	56.91	25
.892	.899	.900	.896	.900	.911	.916	.919	.921	.928	.8875	.928	.855	.073	59.14	26
.998	1.006	1.007	1.010	1.011	1.013	1.007	.997	.993	.991	.9862	1.013	.935	.078	61.63	27
.853	.852	.840	.856	.853	.852	.850	.849	.845	.839	.8939	.982	.839	.143	59.29	28
.810	.818	.835	.846	.858	.866	.874	.874	.879	.882	.8274	.882	.789	.093	57.59	29
.914	.895	.901	.900	.893	.886	.886	.886	.881	.876	.9007	.918	.876	.042	59.48	30
.8238	.8266	.8286	.8303	.8319	.8331	.8333	**.8338**	.8333	.8333	.8269	.886	.763	.123	--------	
57.51	57.59	57.64	57.67	57.72	57.75	57.75	**57.77**	57.76	57.76	57.59	59.09	55.97	3.12	57.59	

JULY, 1883.

TABLE XXIX.—*Atmospheric pressure (reduced to sea)*,[a] *July*, 1883.

Washington mean time. Reduce to local mean time by adding 49m

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.877	.878	.872	.872	.875	.877	.868	.883	.880	.880	.873	.879	.878	.879
2	.856	.846	.841	.842	.840	.831	.824	.824	.827	.813	.809	.800	.787	.776
3	.714	.710	.705	.701	.693	.686	.677	.667	.656	.652	.641	.623	.622	.621
4	.663	.676	.680	.696	.710	.718	.725	.734	.752	.752	.751	.756	.761	.766
5	.844	.860	.864	.880	.885	.895	.899	.914	.914	.914	.923	.923	.924	.928
6	.884	.885	.873	.865	.864	.859	.840	.839	.829	.830	.826	.834	.840	.854
7	.845	.836	.834	.839	.848	.845	.854	.857	.863	.871	.863	.870	.873	.882
8	.952	.964	.974	.990	.987	.993	.990	.996	.995	.998	.988	.996	.997	1.009
9	1.075	1.080	1.092	1.095	1.107	1.103	1.111	1.116	1.124	1.123	1.119	1.121	1.127	1.126
10	1.146	1.147	1.147	1.142	1.137	1.132	1.122	1.108	1.108	1.091	1.088	1.074	1.073	1.062
11	1.036	1.032	1.036	1.036	1.035	1.033	1.031	1.028	1.033	1.021	1.023	1.021	1.022	1.021
12	1.025	1.023	1.020	1.015	1.015	1.011	.996	.998	.998	.983	.967	.963	.952	.950
13	.891	.889	.887	.889	.884	.882	.874	.870	.872	.868	.863	.861	.850	.860
14	.876	.870	.868	.858	.857	.851	.838	.824	.817	.807	.798	.784	.780	.763
15	.778	.786	.798	.813	.821	.823	.821	.821	.822	.823	.819	.817	.814	.815
16	.827	.820	.820	.819	.807	.813	.803	.802	.800	.791	.781	.786	.782	.785
17	.856	.854	.864	.872	.868	.877	.882	.871	.877	.873	.861	.855	.858	.861
18	.819	.818	.817	.817	.816	.823	.826	.817	.824	.828	.830	.838	.846	.857
19	.875	.878	.882	.882	.879	.874	.868	.864	.851	.841	.835	.821	.816	.813
20	.680	.669	.665	.640	.630	.609	.597	.577	.566	.549	.535	.527	.524	.514
21	.567	.577	.569	.554	.542	.542	.542	.525	.522	.522	.520	.525	.534	.537
22	.613	.624	.629	.629	.629	.644	.643	.643	.649	.652	.655	.662	.664	.674
23	.744	.747	.755	.756	.760	.776	.783	.792	.795	.794	.802	.805	.811	.816
24	.831	.828	.817	.819	.819	.822	.823	.817	.815	.813	.806	.806	.810	.819
25	.805	.805	.799	.801	.792	.794	.800	.808	.817	.826	.829	.844	.846	.856
26	.904	.902	.904	.918	.909	.911	.902	.907	.904	.901	.894	.888	.883	.880
27	.905	.911	.903	.893	.894	.901	.907	.906	.919	.913	.911	.916	.916	.913
28	.929	.925	.928	.933	.933	.935	.939	.938	.941	.936	.934	.933	.940	.938
29	.996	1.010	1.005	1.015	1.017	1.027	1.027	1.025	1.024	1.016	1.023	1.022	1.021	1.018
30	1.053	1.061	1.063	1.071	1.081	1.082	1.087	1.101	1.098	1.102	1.108	1.098	1.101	1.100
31	1.027	1.019	1.013	1.006	.999	.987	.986	.963	.962	.975	.951	.936	.928	.921
Means	.8675	.8687	.8687	**.8696**	.8688	.8695	.8673	.8656	.8663	.8632	.8589	.8575	**.8574**	.8585
Means in millimeters, 700+	58.63	58.66	58.66	**58.68**	58.66	58.67	58.61	58.58	58.58	58.51	58.41	58.38	**58.36**	58.38

[a] By constant + .030.

[b] Mercurial barometer No. 229.

JULY, 1883.

TABLE XXIX.—*Atmospheric pressure (reduced to sea), July, 1883.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700 +	Date.
.883	.880	.881	.877	.881	.881	.862	.873	.869	.856	.8756	.883	.856	.027	58.83	1
.766	.765	.759	.753	.750	.749	.745	.743	.726	.719	.7913	.856	.719	.137	56.68	2
.619	.614	.615	.617	.624	.626	.635	.640	.642	.657	.6524	.714	.614	.100	53.15	3
.765	.770	.777	.786	.795	.806	.808	.817	.827	.835	.7555	.835	.663	.172	55.79	4
.926	.928	.924	.938	.928	.926	.912	.910	.909	.885	.9064	.938	.844	.094	59.60	5
.877	.872	.878	.874	.876	.864	.859	.859	.849	.845	.8573	.885	.826	.059	58.36	6
.888	.894	.901	.906	.912	.926	.926	.922	.931	.945	.8805	.945	.834	.111	58.94	7
1.010	1.018	1.027	1.029	1.037	1.033	1.035	1.047	1.057	1.060	1.0[illegible]76	1.060	.952	.108	62.19	8
1.128	1.134	1.131	1.137	1.136	1.135	1.134	1.140	1.143	1.144	**1.1200**	1.144	1.075	.069	**65.03**	9
1.066	1.056	1.049	1.044	1.037	1.038	1.043	1.038	1.039	1.038	1.0844	**1.147**	1.037	.110	64.12	10
1.024	1.023	1.016	1.010	1.014	1.018	1.023	1.017	1.018	1.023	1.0248	1.036	1.010	.026	62.62	11
.940	.925	.927	.928	.908	.918	.909	.898	.900	.899	.9612	1.025	.898	.127	61.00	12
.858	.869	.870	.874	.881	.878	.885	.884	.888	.876	.8751	.891	.850	.041	58.81	13
.751	.755	.754	.755	.756	.755	.759	.763	.765	.772	.7990	.876	.751	.125	56.88	14
.818	.825	.824	.834	.834	.843	.843	.841	.830	.831	.8206	.843	.778	.065	57.44	15
.787	.792	.804	.819	.828	.839	.838	.848	.848	.852	.8121	.852	.781	.071	57.21	16
.852	.855	.854	.849	.845	.845	.841	.837	.830	.824	.8567	.882	.824	.058	58.36	17
.863	.859	.865	.868	.873	.878	.883	.884	.878	.882	.8462	.884	.816	.068	58.07	18
.807	.789	.781	.773	.762	.750	.737	.723	.710	.692	.8126	.882	.692	.190	57.24	19
.518	.518	.515	.544	.557	.558	.559	.567	.581	.576	.5740	.680	**.514**	.166	51.16	20
.556	.560	.566	.572	.579	.585	.589	.596	.608	.614	**.5585**	.614	.520	.094	**50.76**	21
.679	.678	.687	.690	.694	.703	.704	.713	.725	.733	.6673	.733	.613	.120	53.53	22
.821	.813	.816	.817	.819	.816	.819	.825	.828	.830	.7975	.830	.744	.086	56.85	23
.819	.815	.826	.837	.843	.852	.852	.844	.833	.825	.8246	.852	.806	.046	57.54	24
.864	.871	.882	.877	.879	.885	.890	.894	.896	.898	.8441	.898	.792	.106	58.02	25
.880	.876	.871	.873	.880	.878	.878	.884	.889	.896	.8922	.918	.871	.047	59.24	26
.908	.909	.911	.903	.912	.911	.909	.907	.910	.913	.9084	.919	.893	.026	59.65	27
.945	.948	.954	.976	.961	.967	.975	.984	.986	.993	.9488	.993	.925	.068	60.69	28
1.015	1.018	1.020	1.022	1.017	1.024	1.028	1.029	1.026	1.035	1.0200	1.035	.996	.039	62.49	29
1.101	1.101	1.092	1.093	1.092	1.080	1.073	1.070	1.051	1.038	1.0832	1.108	1.038	.070	64.10	30
.921	.915	.918	.920	.915	.919	.930	.924	.936	.948	.9550	1.027	.915	.112	60.85	31
.8598	.8595	.8611	.8644	.8653	.8673	.8673	.8684	.8686	.8688	.8649	.909	.821	.088	-------	
58.43	58.43	58.46	58.53	58.56	58.61	58.61	58.63	58.66	58.66	58.56	59.68	57.44	2.23	58.55	

AUGUST, 1883.

TABLE XXX.—*Atmospheric pressure (reduced to sea),*[a] *August,* 1883.

Washington mean time. Reduce to local mean time by adding 49^{m}

Barometer[b] above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

B.	Gravity correction.
28	0.070
29	0.072

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	.966	.982	.993	1.004	1.006	1.016	1.113	1.021	1.027	1.033	1.039	1.037	1.037	1.034
2	1.028	1.029	1.026	1.031	1.028	1.023	1.022	1.014	1.012	.994	.986	.979	.977	.972
3	.964	.961	.963	.962	.953	.943	.939	.930	.923	.913	.895	.891	.894	.879
4	.854	.859	.859	.856	.859	.861	.858	.866	.867	.857	.856	.853	.856	.854
5	.763	.754	.749	.741	.742	.736	.729	.725	.730	.725	.721	.721	.721	.723
6	.685	.682	.663	.636	.618	.597	.597	.581	.566	.568	.572	.573	.574	.580
7	.660	.686	.694	.713	.714	.716	.720	.722	.719	.723	.719	.723	.729	.720
8	.832	.842	.855	.870	.865	.878	.879	.888	.897	.898	.897	.900	.898	.898

[a] By constant + .030.

[b] Mercurial barometer No. 229.

AUGUST, 1883.

TABLE XXX.—*Atmospheric pressure (reduced to sea), August, 1883.*

B.	Gravity correction.
30	0.074
31	0.077

Washington mean time. Reduce to local mean time by adding 49^m

Barometer above the sea, 24.2 feet [7.38 meters].

$H = 29.000 +$ $\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in mm., 700+	Date.
1.036	1.033	1.039	1.037	1.031	1.034	1.033	1.030	1.029	1.031	**1.0225**	**1.039**	.966	.073	**62.54**	1
.971	.970	.973	.976	.979	.976	.969	.970	.965	.968	.9932	1.029	.965	.064	61.81	2
.879	.870	.878	.881	.878	.868	.866	.858	.859	.859	.9044	.964	.858	.106	59.55	3
.846	.845	.839	.835	.824	.814	.802	.792	.782	.775	.8404	.867	.775	.092	57.92	4
.715	.717	.721	.724	.721	.722	.713	.712	.710	.697	.7263	.763	.697	.066	55.02	5
.589	.598	.602	.599	.612	.614	.630	.639	.642	.658	**.6115**	.685	**.566**	.119	**52.13**	6
.736	.749	.755	.749	.762	.771	.782	.797	.810	.820	.7370	.820	.660	.160	55.31	7
.903	.908	.916	.913	.912	.906	.917	.909	.903	.893	.8907	.917	.832	.085	59.22	8

TABLE XXXI.—*Mean daily barometer at Fort Conger, August* 8, 1881, *to August* 8, 1883.

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	August, 1881.	Septemb'r, 1881.	October, 1881.	Novemb'r, 1881.	Decemb'r, 1881.	January, 1882.	Februa'y, 1882.	March, 1882.	April, 1882.	May, 1882.	June, 1882.	July, 1882.	Yearly mean.
1	--------	29.620	29.578	30.124	29.242	29.648	29.255	29.682	29.830	30.227	30.280	29.967	--------
2	--------	.746	.501	.112	.376	.947	.449	.178	.933	.142	.116	30.060	--------
3	--------	30.047	.546	.026	.516	30.176	.557	.372	30.048	.230	.079	.166	--------
4	--------	.190	.399	29.930	.636	29.788	.879	.760	29.833	.350	29.978	.093	--------
5	--------	29.979	.456	.417	.656	.694	30.387	.888	.840	.224	.957	29.911	--------
6	--------	.997	.561	.293	.764	.844	.485	.807	.847	.126	30.011	.809	--------
7	--------	.930	.681	.453	.868	.925	29.953	.876	.953	.031	29.984	.786	--------
8	29.477	.719	.558	.595	30.003	.874	.643	.683	30.349	.189	.971	.687	--------
9	.436	.682	.626	.796	29.930	.861	.641	.595	.924	.314	30.032	.829	--------
10	.607	.206	.832	.841	.856	30.004	.760	.526	.635	.316	.089	.946	--------
11	.765	.419	.906	.912	.708	29.989	.906	.386	.463	.299	.014	30.028	--------
12	.901	.612	.929	30.167	.479	.692	.900	.506	.519	.225	29.909	29.927	--------
13	.918	.822	.970	.011	.426	.508	.910	.701	.452	.035	.946	.623	--------
14	.814	.865	.932	.054	.594	.343	.957	.814	.070	29.910	.808	.527	--------
15	.888	.908	.673	.030	.732	.641	.585	.876	29.777	.694	.528	.532	--------
16	.973	.866	.550	29.866	.751	.391	.365	30.189	.678	.766	.460	.507	--------
17	30.009	30.073	.736	.908	.751	.542	.364	.526	.721	.768	.545	.654	--------
18	29.979	.160	.766	.744	.777	.667	.449	.478	.962	.766	.587	.532	--------
19	.853	.147	30.085	.553	.785	.846	.750	.421	30.193	.888	.718	.476	--------
20	.805	29.968	.098	.436	.729	.872	.743	.194	.408	30.021	.881	.566	--------
21	.743	.939	.157	.618	.612	.891	.948	29.767	.218	.073	30.033	.703	--------
22	.814	.808	.439	.354	.477	.861	30.345	.329	29.970	.223	29.828	.708	--------
23	.957	.713	.417	.430	.413	.590	.286	.359	30.427	.420	.820	.771	--------
24	30.099	.665	.262	.702	.459	.345	29.832	.566	.060	.444	30.069	.683	--------
25	.096	.660	.341	.836	.686	.607	.532	.781	.188	.302	.105	.554	--------
26	29.944	.632	.362	.758	.882	.884	.336	.748	.192	.192	.078	.553	--------
27	.770	.480	.408	.783	30.098	.823	.357	.713	.294	.166	.033	.438	--------
28	.818	.601	.200	.715	.096	.549	.544	.607	.218	.166	.053	.220	--------
29	.948	.787	29.993	.702	29.943	.600	--------	.167	.230	29.981	.010	.482	--------
30	.875	.774	.751	.616	.957	.338	--------	.473	.185	30.143	29.965	.770	--------
31	.714	--------	.920	--------	.885	.476	--------	.920	--------	.400	--------	.612	--------
Means	29.842	29.800	29.891	29.760	29.709	29.717	29.754	29.738	30.151	30.130	29.930	29.714	29.845
Means in millimeters	757.97	756.91	759.22	755.89	754.60	754.80	755.74	755.33	765.83	765.29	760.21	754.72	757.92

TABLE XXXI.—*Mean daily barometer at Fort Conger, August* 8, 1881, *to August* 8, 1883.

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

August, 1882.	September, 1882.	October, 1882.	November, 1882.	Decemb'r, 1882.	January, 1883.	February, 1883.	March, 1883.	April, 1883.	May, 1883.	June, 1883.	July, 1883.	August, 1883.	Date.
29.569	29.581	29.800	29.818	30.027	**30.357**	**30.166**	29.647	29.650	30.100	29.695	29.876	30.022	1
.747	.558	.726	.707	29.954	.146	29.812	.923	.605	29.972	.551	.791	29.993	2
.919	.578	.644	.709	30.056	.254	.795	30.096	.487	30.117	.526	.652	.904	3
.878	.563	.637	.868	.266	29.874	.483	.205	**.389**	.199	.610	.756	.840	4
.817	.708	.843	.931	.016	.621	.513	**.677**	.588	.233	.680	.906	.726	5
.959	.574	.840	30.006	29.967	.646	.445	.250	.666	.383	.662	.857	.612	6
.989	.715	.900	.065	.995	.540	.757	.029	.876	.613	.620	.880	.737	7
.671	.863	.887	.136	30.088	.804	.384	.046	30.049	**.661**	.610	30.008	.891	8
.502	30.048	.634	.424	.304	30.058	.284	.492	29.751	.543	**.504**	**.120**	-------	9
.679	**.154**	**.462**	.216	.363	.285	.491	.231	.862	.391	.620	.084	-------	10
.664	.051	.600	29.868	.493	.216	.495	29.882	.746	.245	.761	.025	-------	11
.770	29.872	.570	.490	**.577**	.020	.465	.852	.871	.099	.882	29.961	-------	12
.805	.854	.629	**.268**	.478	29.950	.362	.559	30.004	29.819	**30.138**	.875	-------	13
.886	.795	.657	.297	.337	.799	.440	**.466**	.066	.939	.098	.799	-------	14
.881	.828	.694	.319	.352	.814	.736	.840	.276	.853	.002	.821	-------	15
.850	.988	.978	.638	.451	30.030	.817	30.077	.259	.837	29.782	.812	-------	16
.924	30.149	30.078	.662	.095	29.992	.653	29.859	.238	30.060	.974	.857	-------	17
.896	.102	29.968	.790	29.673	.919	.220	.902	.117	.255	.985	.846	-------	18
.581	29.808	30.197	.914	**.661**	.819	**.003**	30.031	.077	.148	.969	.813	-------	19
.619	.383	.140	30.016	.850	30.139	.137	29.932	29.911	29.900	.944	.574	-------	20
.688	**.328**	29.913	.162	30.188	.283	.397	.805	30.013	.678	30.035	**.558**	-------	21
.708	.459	.840	.332	.142	29.829	.704	.669	.430	.623	.127	.667	-------	22
.816	.464	30.087	.381	.298	.402	.745	30.354	**.662**	.617	.073	.798	-------	23
.908	.522	.168	.340	.138	.234	.951	.224	.516	.831	29.664	.825	-------	24
.951	.657	.249	.289	29.983	**.154**	30.128	.392	.384	.831	.800	.844	-------	25
30.036	.548	.262	**.455**	30.119	.397	29.907	.415	.312	.802	.888	.892	-------	26
.021	.577	**.306**	.182	.216	.576	.772	.192	.152	.777	.986	.908	-------	27
29.985	.794	.183	.173	29.989	.683	.456	.179	.362	.711	.894	.949	-------	28
.826	.978	.103	.230	.935	.929	-------	.117	.590	.624	.827	30.020		29
.863	.727	.016	.046	.899	30.156	-------	.182	.490	**.535**	.901	.083	Yearly	30
.710	-------	.005	-------	30.250	.203	-------	29.983	-------	.658	-------	29.955	mean.	31
29.810	29.741	29.904	29.958	**30.134**	29.875	**29.590**	30.049	30.047	30.002	29.827	29.865	29.900	
757.16	755.41	759.57	760.92	**765.39**	758.81	**751.57**	763.23	763.18	762.04	757.59	758.56	759.45	

TABLE XXXII.—*Mean hourly barometer at Fort Conger, August, 1881, to July, 1883, inclusive.*

Washington mean time. To reduce to local mean time add 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Hour.	*August, 1881.		September, 1881.		October, 1881.		November, 1881.		December, 1881.		
	Aneroid.	Mercurial.	Aneroid.	Mercurial.	Aneroid.	Mercurial.	Aneroid.	Mercurial.	Aneroid.	Mercurial.	Mercurial, 16th to 31st.
1 a. m	29.8339		29.7994		29.8811		29.7687		29.7074		29.7735
2 a. m	.8355		.8024		**.8779**		.7710		.7097		.7744
3 a. m	.8404	29.8425	.8044	29.8040	.8815	29.8886	**.7740**	**29.7765**	.7110	29.7124	.7793
4 a. m	.8422		.8097		.8821		.7723		.7100		**.7838**
5 a. m	.8464		**.8111**		.8847		.7707		.7084		.7821
6 a. m	.8472		.8064		.8853		.7697		.7019		.7786
7 a. m	.8511	**.8503**	.8067	**.8079**	.8863	**.8930**	.7643	.7732	.7006	.7074	.7771
8 a. m	.8544		.8027		.8908		.7663		**.6965**		.7683
9 a. m	**.8567**		.7984		.8937		.7660		.6981		.7682
10 a. m	.8503		.7967		.8866		.7603		.6990		.7661
11 a. m	.8468	.8431	.7957	.7976	.8885	.8898	.7573	.7574	.6990	**.7002**	.7613
Noon	.8414		.7974		.8931		.7553		.6987		**.7565**
1 p. m	.8401		.7957		.8934		.7543		.7010		.7579
2 p. m	.8418		.7961		.8944		.7557		.7055		.7591
3 p. m	.8401	.8390	.7977	.8023	.8960	.8925	.7590	.7566	.7119	.7067	.7610
4 p. m	.8405		**.7947**		.8969		.7610		.7171		.7651
5 p. m	.8401		.7967		.8995		.7627		**.7216**		.7718
6 p. m	.8397		.8007		.8966		.7593		.7174		.7681
7 p. m	.8372	.8382	.8017	.8019	.8969	.8919	.7583	.7504	.7190	**.7165**	.7699
8 p. m	.8389		.8015		.8966		.7547		.7181		.7671
9 p. m	.8347		.7992		.8989		.7510		.7197		.7679
10 p. m	.8355		.7999		**.9018**		**.7463**		.7184		.7661
11 p. m	.8347	**.8352**	.7995	**.7961**	.8969	**.8875**	.7450	**.7456**	.7165	.7124	.7624
Midnight	**.8334**		.7955		.8940		**.7463**		.7148		.7633
Means	29.8418	29.8414	29.8004	29.8016	**29.8912**	29.8906	29.7604	29.7600	**29.7092**	29.7093	29.7687
Means in millimeters	757.97	757.95	756.91	756.91	**759.22**	759.19	755.89	755.89	**754.60**	**754.60**	756.12

Hour.	Jan., 1882.	Feb., 1882.	Mar., 1882.	Apr., 1882.	May, 1882.	June, 1882.	July, 1882.	Aug., 1882.	Sept., 1882.	Oct., 1882.
1 a. m	29.7214	29.7494	**29.7295**	**30.1415**	**30.1211**	29.9380	29.7206	29.8063	29.7393	**29.8961**
2 a. m	.7218	.7494	.7353	.1443	.1241	.9379	.7222	.8077	.7401	.8985
3 a. m	.7245	.7496	.7371	.1473	.1253	.9382	.7231	.8096	.7432	.9019
4 a. m	.7233	.7519	.7395	.1507	.1287	.9389	**.7237**	.8124	.7447	.9053
5 a. m	**.7264**	.7508	.7431	.1523	.1317	**.9409**	.7229	.8142	**.7461**	.9053
6 a. m	.7229	.7522	.7448	.1527	.1330	.9387	.7206	**.8169**	.7458	.9069
7 a. m	.7213	.7525	.7468	.1536	.1332	.9368	.7193	**.8169**	.7450	.9065
8 a. m	.7224	.7488	.7465	.1532	.1344	.9342	.7186	.8149	.7434	.9067
9 a. m	.7196	.7535	**.7480**	**.1562**	**.1378**	.9359	.7154	.8138	.7408	.9033
10 a. m	.7143	.7517	.7453	.1548	.1362	.9298	.7114	.8104	.7381	.9011
11 a. m	.7124	.7516	.7391	.1536	.1343	.9255	.7074	.8068	.7346	.9011
Noon	.7090	**.7472**	.7371	.1512	.1319	.9230	.7063	**.8054**	.7330	.8982
1 p. m	**.7027**	.7488	.7327	.1507	.1308	**.9216**	**.7045**	**.8054**	**.7325**	.8999
2 p. m	.7042	.7525	.7313	.1510	.1310	.9220	.7049	.8064	.7339	.9011
3 p. m	.7079	.7560	.7337	.1507	.1312	.9221	.7098	.8078	.7367	.9027
4 p. m	.7150	.7578	.7335	.1532	.1318	.9233	.7112	.8073	.7396	.9064
5 p. m	.7134	.7590	.7340	.1516	.1306	.9246	.7135	.8100	.7417	.9090
6 p. m	.7163	.7606	.7360	.1523	.1291	.9251	.7144	.8108	.7442	.9088
7 p. m	.7163	.7576	.7355	.1521	.1288	.9253	.7135	.8114	.7445	**.9091**
8 p. m	.7174	.7595	.7349	.1515	.1288	.9254	.7129	.8116	.7442	.9087
9 p. m	.7179	**.7609**	.7375	.1499	.1278	.9252	.7105	.8104	.7436	.9068
10 p. m	[illegible]	.7600	.7374	.1467	.1260	.9250	.7094	.8081	.7441	.9046
11 p. m	.7152	.7602	.7392	.1461	.1274	.9250	.7066	.8103	.7414	.9019
Midnight	[illegible]	.7598	.7409	.1463	.1283	.9265	.7051	.8105	.7414	.9020
Means	29.7166	29.7542	29.7383	**30.1506**	30.1301	29.9295	**29.7136**	29.8102	29.7409	29.9038
Means in millimeters	754.80	755.74	755.33	**765.80**	765.29	760.21	**754.72**	757.16	755.41	759.55

*Twenty-four days only.

TABLE XXXII.—*Mean hourly barometer at Fort Conger, August, 1881, to July, 1883*—Continued.

Washington mean time. To reduce to local mean time add 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Hour.	Nov., 1882.	Dec., 1882.	Jan., 1883.	Feb., 1883.	March, 1883.	April, 1883.	May, 1883.	June, 1883.	July, 1883.
1 a. m.	29.9557	**30.1266**	29.8760	**29.5997**	30.0351	**30.0382**	30.0129	29.8274	29.8675
2 a. m.	.9581	.1302	.8789	.5979	**.0334**	.0420	.0122	.8291	.8687
3 a. m.	.9582	.1315	.8816	.5957	.0341	.0428	.0154	.8292	.8687
4 a. m.	.9610	.1332	**.8841**	.5968	.0384	.0444	**.0169**	.8289	**.8696**
5 a. m.	**.9612**	.1363	.8828	.5959	.0420	.0445	.0165	.8292	.8688
6 a. m.	.9595	.1349	.8818	.5945	.0467	.0443	.0167	.8288	.8695
7 a. m.	.9584	.1325	.8796	.5925	.0476	.0420	.0119	.8266	.8673
8 a. m.	.9578	.1310	.8783	.5919	.0406	.0452	.0106	.8221	.8656
9 a. m.	.9574	.1311	.8751	.5906	.0486	.0443	.0098	.8201	.8663
10 a. m.	.9558	.1306	.8742	.5902	.0497	.0435	.0055	.8195	.8632
11 a. m.	.9539	.1315	.8708	.5861	.0498	.0419	.0012	**.8173**	.8589
Noon	**.9531**	.1309	.8676	.5820	.0476	.0415	29.9964	.8186	.8575
1 p. m.	.9544	.1303	.8669	**.5799**	.0490	.0431	.9936	.8199	**.8574**
2 p. m.	.9545	.1302	.8676	.5807	.0488	.0447	.9929	.8211	.8585
3 p. m.	.9546	.1352	.8736	.5869	.0538	.0464	.9936	.8238	.8598
4 p. m.	.9595	.1375	.8759	.5913	.0582	.0493	.9944	.8266	.8595
5 p. m.	.9600	.1386	.8784	.5900	.0597	.0501	.9959	.8286	.8611
6 p. m.	.9610	.1394	.8768	.5925	**.0608**	.0514	.9946	.8303	.8644
7 p. m.	.9594	**.1395**	.8753	.5891	.0565	.0507	.9938	.8319	.8653
8 p. m.	.9600	.1375	.8746	.5892	.0557	.0518	.9936	.8331	.8673
9 p. m.	.9594	.1387	.8753	.5891	.0552	.0529	.9922	.8333	.8672
10 p. m.	.9583	.1383	.8736	.5885	.0522	**.0556**	.9908	**.8338**	.8684
11 p. m.	.9576	.1380	.8691	.5878	.0479	.0548	.9900	.8333	.8686
Midnight	.9586	.1365	**.8663**	.5801	.0468	.0547	**.9893**	.8333	.8688
Means	29.9578	**30.1342**	29.8752	**29.5900**	30.0486	30.0467	30.0017	29.8269	29.8649
Means in millimeters	760.92	**765.39**	758.81	**751.57**	763.23	763.18	762.04	757.59	758.56

TABLE XXXIII.—*Mean atmospheric pressure, by decades, at Fort Conger.*

$\phi = 81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	Discovery Bay.	Fort Conger.	Fort Conger.	Grand mean.	
	1875–'76.	1881–'82.	1882–'83.	Inches.	Millimeters.
Aug., 1–10	29.592	29.756	29.773	29.707	754.55
Aug., 11–20	29.712	29.890	29.787	29.796	756.80
Aug., 21–31	29.789	29.888	29.865	29.847	758.10
Sept., 1–10	29.680	29.813	29.734	29.742	755.43
Sept., 11–20	29.695	29.886	29.883	29.821	757.44
Sept., 21–30	29.740	29.706	29.605	29.684	753.96
Oct., 1–10	29.843	29.574	29.737	29.718	754.82
Oct., 11–20	29.869	29.864	29.851	29.861	758.46
Oct., 21–31	30.207	30.202	30.103	30.171	766.30
Nov., 1–10	30.322	29.758	29.988	30.023	762.57
Nov., 11–20	30.166	29.867	29.626	29.886	759.09
Nov., 21–30	30.095	29.655	30.259	30.003	762.07
Dec., 1–10	30.079	29.676	30.104	29.953	760.80
Dec., 11–20	29.383	29.672	30.197	29.751	755.67
Dec., 21–31	29.495	29.773	30.105	29.791	756.68
Jan., 1–10	29.666	29.876	29.959	29.834	757.77
Jan., 11–20	29.869	29.649	29.970	29.829	757.64
Jan., 21–31	29.507	29.633	29.713	29.618	752.28
Feb., 1–10	29.774	29.801	29.613	29.729	755.10
Feb., 11–20	29.564	29.693	29.433	**29.563**	**750.89**
Feb., 21–28, 29	30.047	29.772	29.757	29.859	758.41
Mar., 1–10	30.069	29.637	30.160	29.955	760.87
Mar., 11–20	30.025	30.009	29.840	29.958	760.92
Mar., 21–31	30.218	29.584	30.137	29.980	761.48
Apr., 1–10	30.291	30.119	29.692	30.034	762.85
Apr., 11–20	30.407	30.124	30.056	30.196	766.96
Apr., 21–30	30.283	30.208	30.391	**30.294**	**769.45**
May, 1–10	30.031	30.121	30.321	30.158	766.00
May, 11–20	30.119	29.937	30.016	30.024	762.59
May, 21–31	29.761	30.135	29.699	29.865	758.56
June, 1–10	29.781	30.050	29.608	29.813	757.24
June, 11–20	29.868	29.740	29.953	29.854	758.28
June, 21–30	29.754	29.999	29.919	29.891	759.22
July, 1–10	29.730	29.925	29.893	29.849	758.15
July, 11–20	29.651	29.637	20.838	29.709	754.60
July, 21–31	29.424	29.591	29.864	29.626	752.42

ANNUAL MEAN PRESSURE.

The annual mean pressure at Fort Conger was 29.886 (759.09^{mm}) in 1875–'76; 29.845 (758.05^{mm}) in 1881–'82; 29.903 (759.53^{mm}) in 1882–'83, and at Polaris Bay, 29.970 (761.22^{mm}) in 1871–'72, making a grand mean of 29.901 (759.48^{mm}).

These means show a regularity in the pressure from year to year, which, while rather surprising considering the extraordinary accidental changes, gives good reasons for believing that this grand mean is practically the normal.

Through the courtesy of Mr. A. F. W. Paulsen, chief of the International Danish Expedition, it is learned that the mean pressure at Ivigtut, 61° N., 48° W., for 18 years was 29.666 (753.50^{mm}); at Jacobshavn, 69° N., 51° W., for 18 years, 29.749 (755.61^{mm}); at Godthaab, 64° N., 52° W., for 18 years, 29.682 (753.91^{mm}), and at Upernivik, 73° N., 56° W., for 9 years, 29.784 (756.50^{mm}).

Observations collated and herewith published (Table No. 34) show that the mean annual pressure in the vicinity of Littleton Island, 79° N., 73 W°., deduced from six years' observations, is 29.787 (756.58^{mm}).

-'82; 29.903
.48mm).
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56° W., for 9

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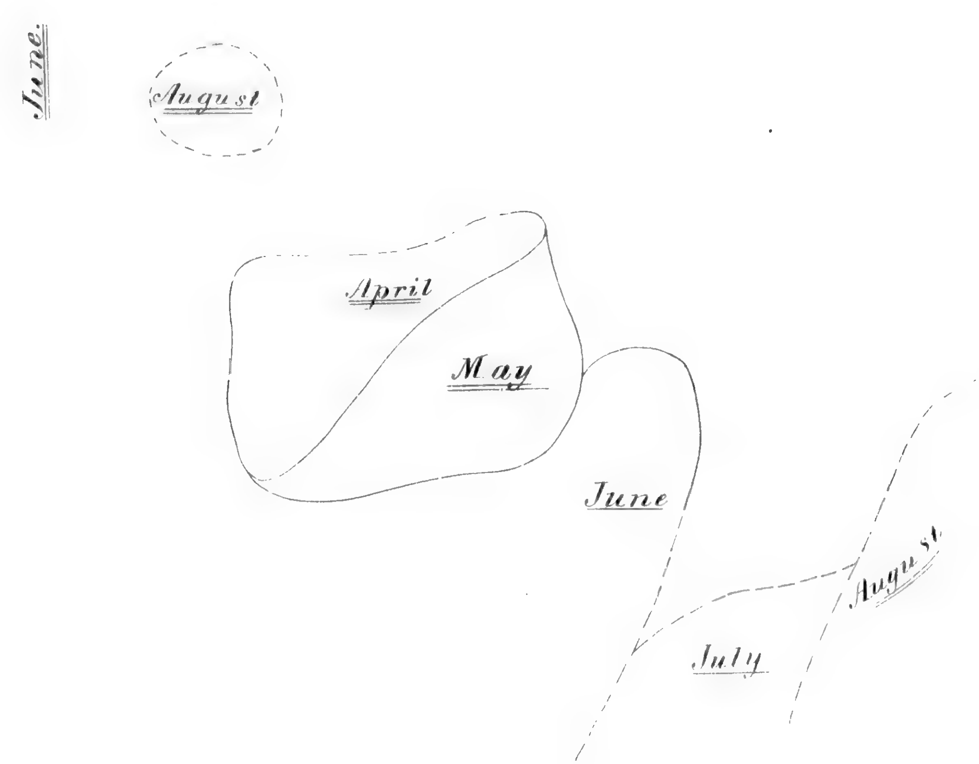
CHART 1.

ANNUAL FLUCTUATION OF ATMOSPHERIC PRESSURE AREAS OF MAXIMUM MONTHLY MEANS.



NOTE.—Months doubly underscored indicate maximum mean of the year, singly underscored indicate secondary maximum mean of the year.

CHART 1.
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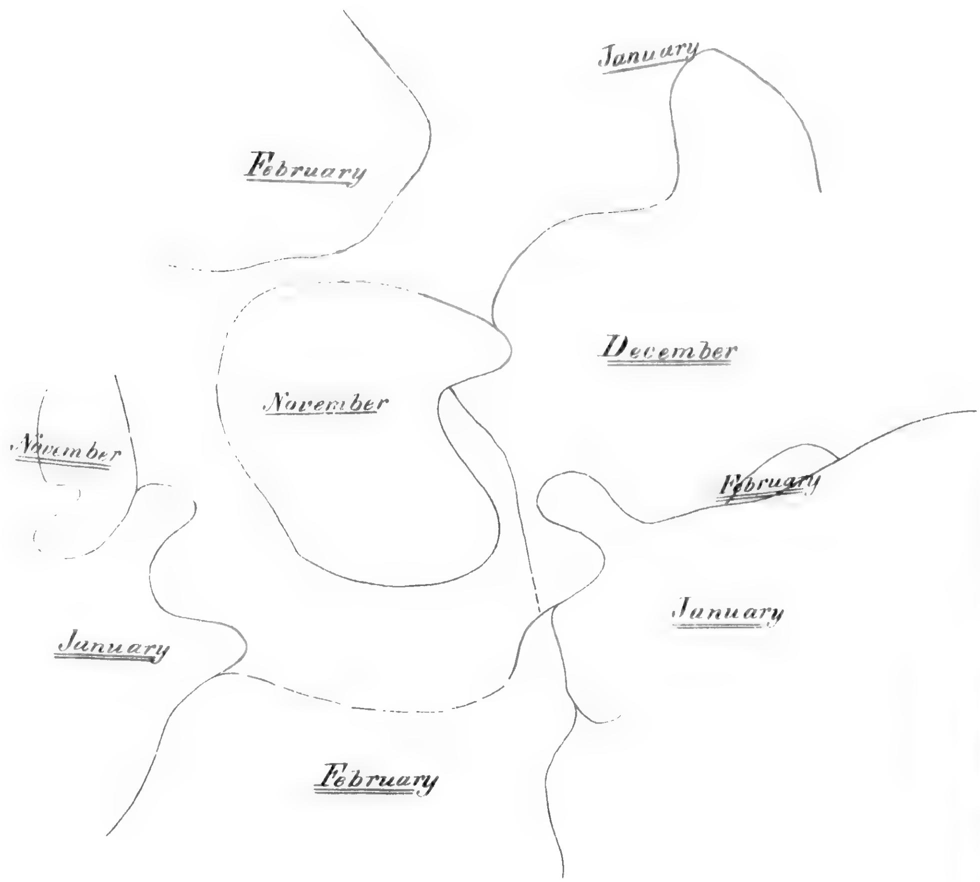
ANNUAL FLUCTUATION OF ATMOSPHERIC PRESSURE AREAS OF MAXIMUM MONTHLY MEANS.



NOTE.—Months doubly underscored ═ indicate maximum mean of the year, singly underscored — indicate secondary maximum mean of the year.

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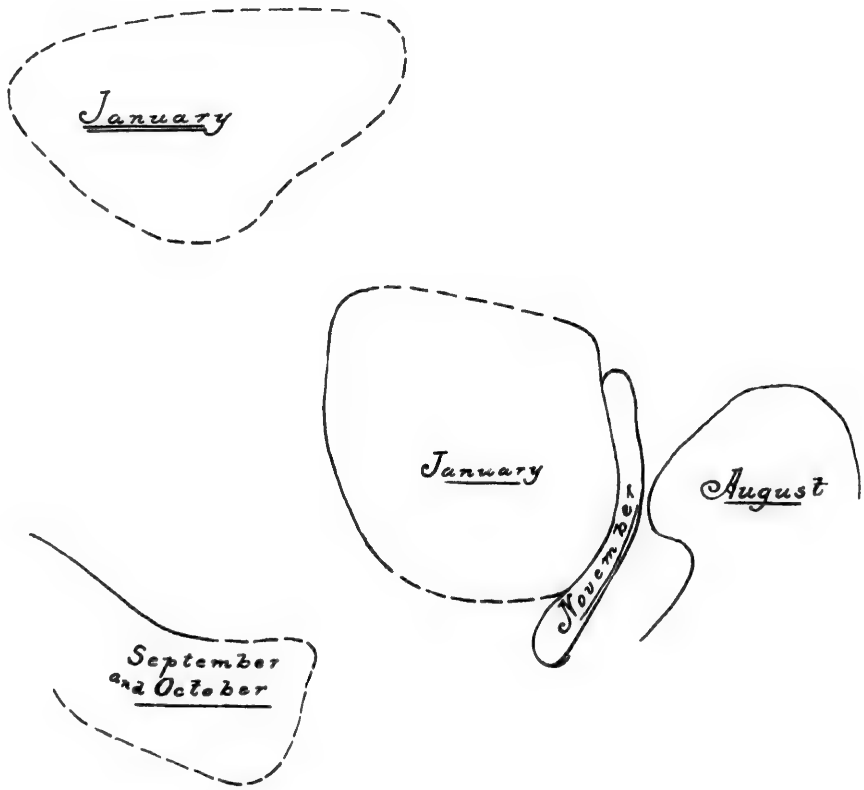
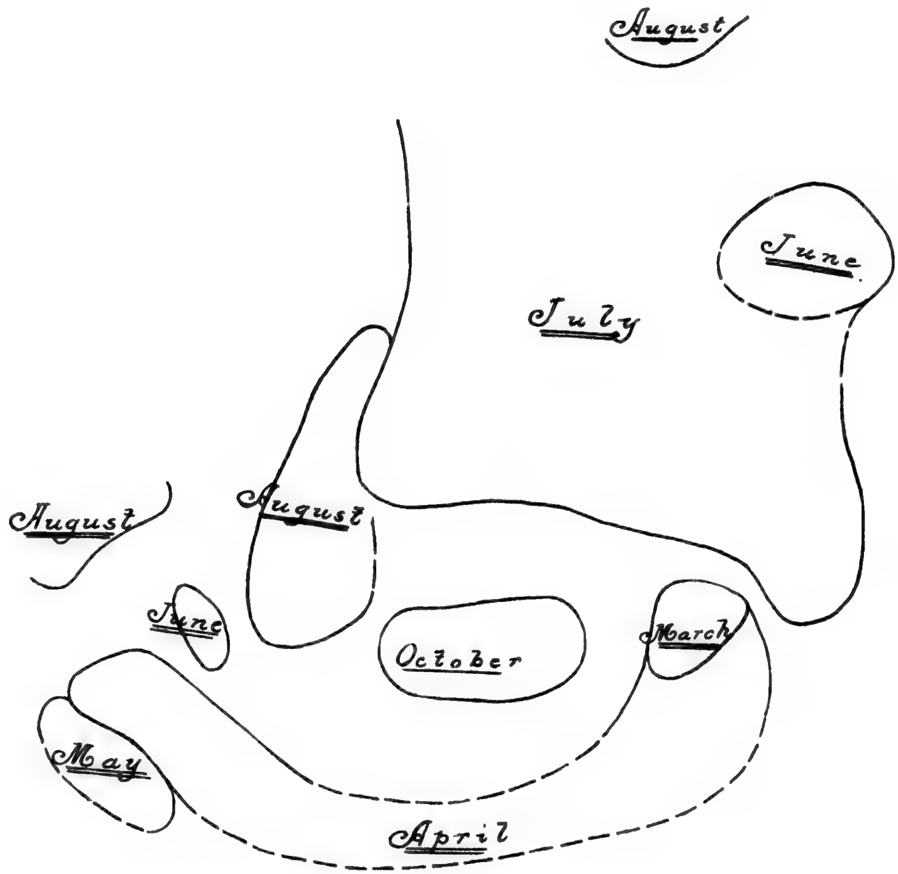
ANNUAL FLUCTUATION OF ATMOSPHERIC PRESSURE. AREAS OF MINIMUM MONTHLY MEANS.



NOTE.—Months doubly underscored ═ indicate minimum mean of the year, singly underscored — indicate secondary minimum mean of the year.

CHART 4.

ANNUAL FLUCTUATION OF ATMOSPHERIC PRESSURE. AREAS OF MINIMUM MONTHLY MEANS.



NOTE.—Months doubly underscored ═ indicate minimum mean of the year, singly underscored — indicate secondary minimum mean of the year.

These figures indicate that along the west coast of Greenland the atmospheric pressure increases from Ivigtut to Upernivik at the rate of 0.010 inch (0.254^{mm}) for each degree of latitude, and from Upernivik to Fort Conger, 0.01 inch (0.254^{mm}) for each degree.

Along the west coast of Davis Strait the decrease for each degree of latitude from Cumberland Gulf, 66° N., 67° W., to Fort Conger is about .011 inch (0.279^{mm}).

The line of no increase possibly falls slightly to the westward of Cumberland Gulf, as the observations in Boothia Felix show a slightly higher mean than prevails at Fort Conger. This goes far to finally disprove the theory so long advanced that the region in the vicinity of the pole is covered by a permanent barometric depression. While such a condition of affairs probably obtains in the vicinity of the south pole, it has been very evident of late years to all meteorologists that the marked barometric depressions of the Northern Hemisphere are to be found over the Greenland and Behring Seas.

ANNUAL FLUCTUATION OF THE ATMOSPHERIC PRESSURE.

In connection with the fluctuation of pressure from month to month, an examination of extensive Arctic data, while yet at Fort Conger, was quite conclusive as to the persistency and regularity of a double annual curve.

The careful, systematic reductions by the British meteorological office, as given to the world in the admirable contributions to the meteorology of the Arctic regions, has rendered possible the confident use of somewhat uncertain, and, in a few cases, of previously inaccessible data. An examination of the barometric pressure for different years, at widely separated Arctic stations, disclosed such similarity in the annual curves as seemed to justify the consolidation of the data from adjacent stations for a series of years.

The data herewith presented (Table No. 34) shows for itself that the same type of annual curve prevails in Arctic America and Northern Greenland. In Southern Greenland, as will be seen from Mr. Paulsen's annual curves for West Greenland stations, the November maximum is less accentuated than elsewhere. All Greenland, however, as well as the Norwegian Sea region, is covered by a secondary maximum more or less marked in November.

The law governing the periodicity of atmospheric pressure through the year has never been outlined for the entire Northern Hemisphere, save in the expression that winter pressures are greater than those of summer—a statement which, if generally, is not universally true. Mohn, Hahn, Buchan, and others have, however, shown the annual fluctuations for certain parts of the globe with great care and accuracy.

In tabulating such observations as were accessible with the view of determining generally the atmospheric changes in the Arctic circle, I found myself led gradually to an examination of the atmospheric pressure over the whole of the Northern Hemisphere.

The outcome of such labor, the extent and difficulty of which few besides meteorologists can appreciate, was the surprising discovery—if discovery it be—of regular and periodic changes from month to month, which naturally are more or less masked by the great accidental atmospheric variations attendant on storms.

In connection herewith will be found four maps of the Northern Hemisphere (Nos. 1, 2, 3, and 4), on which have been plotted as accurately as possible the areas covered by the crests and troughs of the annual atmospheric waves, as shown by monthly mean pressures.

Though eventually there is no doubt one simple law, more or less dependent on the relative position of the earth and sun, will be found underlying, yet at present the data available seems to permit of no such expression.

The annual oscillation of the barometer at Fort Conger was clearly defined, and coincides with that already deduced from the observations of all the expeditions in Arctic America within the present century. As this marked and peculiar oscillation doubtless obtains at the north geographical pole, it is styled the Polar type.

The principal maximum of April gives rapidly way to the deepest minimum of July, to be followed by another well-marked and complete wave, the crest of which appears in November and the trough in January.

The second type is called American, although it apparently obtains in Europe and Northern Africa, where it is modified by the grand Polar type. The principal and single maximum of January gives way to a deep and strongly marked depression in April.

The Asiatic type in that particular, like the American, consists of a single annual wave. The crest covering India and the valley of the Jenisei in December is not simultaneous for all Asia, but, apparently, moves eastward, reaching the Pacific coast in February. The minimum pressure, occurring over the greater part of Asia in July, also prevails a month earlier in India.

From the observations at Honolulu, Hawaii, in connection with those in the neighborhood of the Aleutian Islands, it seems possible to add a fourth type, the Alaskan. The June or July maximum wanes to a January minimum when not complicated by the advance of the Asiatic wave eastward in February.

The grand polar maximum covers, in April, Arctic America between the 60th and 120th meridians, and apparently extends eastward near the pole to the vicinity of Franz Josef Land. In this same month the principal minimum occurs between the 40th and 50th parallels from 100° W. to 30° E. longitude.

In May the maximum moving southeastward covers Southern Greenland and the Scandinavian peninsula with the intervening seas. The minimum for the year occurs at the same time over the Gulf of Mexico and part of the Spanish peninsula.

In June the high area moves still southward, covering Algeria as a secondary maximum. Scattered stations from the equator to 20° north in South America, the Azore, Canary, and Cape Verde Islands, and in Western Africa, leave it uncertain whether the principal maximum occurs in June or its coming is retarded until July. In June the deepest depression of the year occurs over India and the northwest portion of the United States.

July is marked by the principal minimum of the Northern Hemisphere, which includes all Asia north of the 30th parallel and to the eastward of the 150th meridian. This barometric trough evidently projects itself across the pole, as the principal minimum likewise occurs in July throughout Grinnell Land and a part of the Parry Archipelago.

In August, whether moving eastward or not with the general atmospheric circulation, the principal minimum is found covering Arctic America as well as the Pacific coast region of United States. Meanwhile a secondary minimum occurs over the Mediterranean region.

From July the pressure steadily increases over the north Polar regions, reaching a secondary maximum in November (over almost identically the same region that was covered by the principal maximum in May) prevailing in Arctic America, Greenland, the Norwegian Sea, and the northern part of the British Isles. Strangely enough, at the same time the principal mimimum for the year occurs as a narrow belt extending from the southern Scandinavian peninsula southwestward to the Azores. The principal maximum for the year also occurs in November over the Plateau and North Pacific regions of the United States. These high areas seemingly move southeastward, for the pressure increases over the eastern half of the United States, the Gulf of Mexico, the West India Islands, and Bermuda to the principal maximum in January.

In December occurs the principal pressure over parts of Western Germany, Austria, and European Russia, and in all Asia eastward of the 85th meridian except the extreme southern part of India.

It would appear that the polar wave in its southeastward movement is more or less divided and diverted by the various mountain ranges of Europe, so that a part moving southward forms the principal pressure over the Mediterranean region and Egypt in January, while a portion passing to the eastward covers China, Siam, Southern India, and the Indian Ocean.

There seems to be some analogy between the quite regular movement of these two high polar areas and the high areas which give rise to the cold waves in the United States. The local high areas last referred to evidently originate in Arctic America through radiation over the interior of America during the long Polar night.

The investigations of First Lieut. Thomas M. Woodruff, U. S. A., show that nine-tenths of these areas move directly east or southeast. Without doubt the southerly component in their direction depends upon the fact, mathematically demonstrated by Professor Ferrel, that the diurnal movement of the earth causes a deflection to the right in the Northern Hemisphere.

It is to be noted that the observations here collated (Table No. 34) indicate the general formation of the maximum Polar pressures within the confines of the Arctic circle, after which a generally easterly motion is inaugurated. Deflected to the right in accordance with the principles laid down by Ferrel, their course undergoes other changes dependent evidently upon other causes, but also in a measure upon the configuration of the earth's surface over which they pass.

The Ural and Caucasian mountains, as well as the ranges to the southward of Siberia, seem to notably affect the onward march of these Polar areas. Not only is this evidenced by the fact of a single Asiatic wave annually, but also by the movement of the November Polar wave already mentioned, a considerable portion of which moves southward into Africa without affecting any part of Asia except the Caucasian region.

That a general easterly movement is inaugurated in connection with the polar areas seems evident, not only from the course charted, but also from the fact that the maximum pressures around the Behring Strait region occurs in February and March, and so is presumably either a remnant of the November wave or the beginning of the April one.

At all events the Arctic circle is the only zone in which an area of high pressure exists from May to November, inclusive.

There seems to be no constant relation between the areas of maximum pressure and the general depression, nor any continuously decided movement of these depressions after once formed.

The principal minimum for the year, the Asiatic depression of July, is notable from the fact that it is situated substantially in the center of the great land areas, while in January we find other depressions covering the North Atlantic and North Pacific Oceans.

It is evident that these charts and deductions must be considered crude and unsatisfactory presentations of this complex problem of the annual movement of the atmosphere. Both health and time have failed for more careful collation of the data, or further analysis of the problem. This collation of data and the charts form, it is hoped, a skeleton groundwork on which other meteorologists, better trained and situated, may build.

The conviction that at no distant day the general laws of atmospheric changes will be established, and later, the general character of seasons be predicted through abnormal departures in remote regions, causes this work to be made public, even in its unsatisfactory condition, in the hope that it may contribute somewhat to that great end.

TABLE XXXIV.—*Mean monthly pressure at various Arctic stations.*

(The following are the authorities in part for these tables in question. The greater part of those not specified in this list have been drawn from the excellent Zeitschrift der österreichischen Gesellschaft für Meteorologie, Wien, and the Annalen des physikalischen Central-Observatorium, St. Petersburg.)

Station.	Years.	Latitude north.	Longitude west.	Source of information.
		° ′ ″	° ′ ″	
North Unst	20 (1861–'80)	60 48 00	1 00 00	
Culloden, 104 feet	40 (1841–'80)	57 29 00	4 08 00	Journal Scottish Met. Soc. No. 2, 1885.
Jan Mayen	*13	70 58 00	8 35 00	Lieut. E. Wolhgemuth.
Sabine Island	1	74 32 00	18 49 00	Captain Karl Koldeway.
Ivigtut	18	61 12 00	48 10.5	Expéd. Danoise. Ob. a Godthaab.
Jacobshavn	18	69 13.2	51 02 00	Expéd. Danoise. Ob. a Godthaab.
Godthaab	18	64 10 48	51 43 30	Expéd. Danoise. Ob. a Godthaab.
Upernivik	9	72 47.5	55 53.5	Expéd. Danoise. Ob. a Godthaab.
Drift of the Fox	*5	75 30 00	69 10 00	British Contributions, part 2.
Florberg Beach (*Alert*)	1	82 27 00	61 18 00	Results Arctic Expedition, 1875–'76, Nares.
Polaris Bay	1	81 38 00	61 44 00	Bessels' Die Amer. N. Pol. Exp.
Discovery Harbor	1	81 44 00	64 45 00	Results Arctic Expedition, 1875–'76, Nares.
Fort Conger, G. L.	2	81 44 00	64 45 00	Lieut. A. W. Greely.
Fouike Fiord	1	70 19 00	66 00 00	Schott's Discussions.
North Star Bay	1	76 34 00	68 45 00	British Contributions, part 3.
Polaris House	*8	78 18 00	70 21 00	Bessel's Die Amer. N. Pol. Exp.
Rensselaer Harbor	1¼	78 37 00	70 40 00	Schott's Discussions.
Camp Clay	*10	78 54 00	74 30 00?	Lieut. A. W. Greely.
Igloolik	1	69 21 00	81 53 00	British Contributions, part 3.
Winter Island	1	66 11 00	83 10 00	Do.
Repulse Bay	*8	66 32 00	86 56 00	British Contributions, part 1.
Port Bowen	1	73 13 00	88 55 00	British Contributions, part 3.
Port Leopold	1	73 50 00	90 12 00	Do.
Beechey Island	2	74 43 00	91 54 00	British Contributions, part 4.
Marble Island	1	62 33 00	91 06 00	Capt. G. B. Borden, schooner Abbie Bradford.
Gulf of Boothia	2½	70 00 00	92 00 00	British Contributions, part 2.
Port Kennedy	1	72 01 00	94 14 00	Do.
Wellington Channel	1	75 31 00	92 22 00	Do.
Griffith Island	1	74 34 00	95 20 00	Do.
Northumberland Sound	1	76 52 00	97 00 00	Do.
Melville Sound	*8	74 41 34	101 22 06	British Contributions, part 4.
Cambridge Bay	1	69 03 00	105 12 00	British Contributions, part 3.
Dealy Island	1	74 56 25	108 48 33	British Contributions, part 4.
Winter Harbor	1	74 47 00	110 48 00	British Contributions, part 3.
Princess Royal Island	1	72 47 00	117 35 00	British Contributions, part 4.
Walker Bay	1	71 35 00	117 39 00	British Contributions, part 3.
Mercy Bay	1⅔	74 06 00	117 55 00	British Contributions, part 4.
Sitka	5	57 02 52	135 19 31	Records, Office Chief Signal Officer.
Camden Bay	*11	70 08 00	145 29 00	British Contributions, part 3.
Point Barrow (Ooglaamie)	2	71 16 00	156 40 00	Lieut P. H. Ray.
Fort Alexander	4	58 57 00	158 18 00	Records, Office Chief Signal Officer.
St. Michael's	10	63 28 00	161 48 00	Do.
Unalaska	14¼	53 52.6	166 31.6	Do.
St. Paul's Island	9	57 09 00	170 18 00	Do.

* Months.

VICINITY OF LITTLETON ISLAND.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North Star Bay	1849								29.775	29.766	29.605	29.828	29.669
	1850	29.845	29.371	29.998	29.716	29.834	29.626	29.599					
Steamer Isabel	1851								[a]29.551				
Rensselaer Harbor	1853								[b][29.730]	29.662	29.815	29.713	29.821
	1854	29.458	29.654	29.793	29.977	29.937	29.714	29.736	29.689	29.645	29.686	29.792	29.675
	1855	30.089	30.032	29.693	29.820								
Steamer Fox[c]	1859								[d]29.571	29.727	29.751	29.650	29.565
Foulke Fiord	1860								[e]29.695	29.684	29.618	30.087	30.032
	1861	29.834	29.747	29.816	30.058	29.985	29.678	29.691	[f]29.840				
Polaris House	1872											29.929	29.858
	1873	29.683	29.903	29.799	30.219	30.049	[g]29.711						
Camp Clay	1883								29.810	29.748	[h]30.040	29.803	29.903
	1884	29.832	29.712	29.823	30.139	[i]30.121							
Means		29.790	29.736	29.820	29.988	29.977	29.680	29.675	29.722	29.705	29.734	29.829	29.789
Means in millimeters		756.6	755.3	757.4	761.7	761.4	753.9	753.7	754.9	754.5	755.2	757.6	756.6

[a] For 14 days from Admiral Inglefield's observations north of the 74th parallel.
[b] From Kane's Narrative.
[c] From Admiral Leopold McClintock's observations north of 74th parallel.
[d] For 15 days.
[e] For 7 days.
[f] For 11 days north of the 75th parallel.
[g] For 21 days between Littleton Island and Cape York.
[h] For 20 days.
[i] For 22 days.

FORT CONGER.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Polaris Bay	1871									29.983	29.966	**30.229**	29.751
Do	1872	**29.771**	29.891	30.187	**30.203**	30.030	29.857	**29.786**	29.989				
Discovery Harbor	1875								29.777	29.705	29.981	**30.194**	29.647
Do	1876	29.675	29.994	30.100	**30.327**	29.931	29.801	**29.596**	29.720				
Fort Conger	1881								[a]29.841	29.802	**29.890**	29.760	29.709
Do	1882	29.717	29.754	29.738	**30.151**	30.130	29.929	**29.714**	29.810	29.741	29.904	29.958	**30.134**
Do	1883	29.875	29.590	**30.049**	30.047	39.002	**29.827**	29.865					
Means		**29.760**	29.807	30.018	**30.182**	30.023	29.854	**29.740**	29.827	29.808	29.935	**30.035**	29.810
Means in millimeters		755.9	757.1	762.4	766.6	762.6	758.3	755.4	757.6	757.1	760.3	762.9	757.2

[a] For 24 days.

H. M. S. *ALERT*.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Floeberg Beach[a]	1875									29.679	29.948	**30.153**	29.615
	1876	**29.606**	29.981	30.096	**30.299**	29.915	29.802	**29.599**	29.716				
Means		29.606	29.981	30.096	30.299	29.915	29.802	29.599	29.716	29.679	29.948	30.153	29.615
Means in millimeters		752.0	761.5	764.4	769.6	759.8	757.0	751.8	754.8	753.8	760.7	765.9	752.2

[a] H. M. S. *Alert's* winter quarters.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Winter Harbor	1819									29.900	29.810	29.940	29.860
	1820	30.080	29.770	29.800	29.980	30.110	29.820	29.670	29.730				
Princess Royal Island	1850										29.925	29.813	30.040
	1851	29.939	30.006	30.041	30.103	30.082	29.875	29.799	29.914	29.943			
Walker Bay	1851									[a]29.932	29.863	30.090	30.112
	1852	29.902	29.854	30.164	30.027	30.005	29.815	29.756	29.852				
Mercy Bay	1851										29.942	30.165	30.101
	1852	29.902	29.871	30.174	30.118	30.044	29.816	29.771	29.875	29.859	30.044	30.028	29.983
	1853	29.802	30.138	30.101	30.123	[b]30.112							
Dealy Island[c]	1852									29.840	29.970	30.080	29.940
	1853	29.750	30.120	30.100	30.110	30.065	29.825	29.630	29.705				
Melville Sound[c]	1853									29.820	29.810	29.815	29.840
	1854	29.680	29.755	29.885	30.010								
Means		29.865	29.931	30.038	30.067	30.068	29.830	29.725	29.815	29.879	29.909	29.990	29.982
Means in millimeters		758.6	760.2	763.0	763.7	763.7	757.7	755.0	757.3	758.9	759.7	762.0	761.5

[a] For 18 days.
[b] For 22 days.
[c] Mean of *Resolute* and *Intrepid*.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Igloolik	1822								29.500	29.730	29.830	29.710	29.590
	1823	29.750	29.840	30.030	29.970	29.910	29.930	29.530					
Boothia Gulf	1829											a29.682	29.896
	1830	29.692	30.117	30.011	30.003	30.242	30.105	29.860	29.859	29.834	29.889	30.027	30.083
	1831	30.129	29.972	29.903	29.977	30.040	29.942	29.920	29.856	29.815	b30.026	30.114	29.777
	1832	29.644	29.859	29.984	30.004								
Cambridge Bay	1852									c29.497	29.950	30.011	29.929
	1853	29.801	29.952	30.056	30.017	30.031	29.807	29.675	d29.715				
Port Kennedy	1858									e30.002	29.793	30.044	29.865
	1859	29.972	29.924	30.163	30.170	30.001	29.903	29.695	f29.652				
Means		29.831	29.944	30.024	30.024	30.045	29.937	29.736	29.729	29.802	29.893	29.940	29.857
Means in millimeters		757.7	760.6	762.7	762.7	763.1	760.4	755.3	755.1	757.0	759.3	760.5	758.3

a For 24 days. b For 26 days. c For 8 days. d For 14 days. e For 16 days. f For 8 days.

Ivigtut, 61° 12′ N., 48′ 10.5′ W.	1886–1883	b 29.40 746.8	29.48 748.8	29.68 753.9	29.76 755.9	29.83 757.7	29.77 756.1	29.78 756.4	29.78 756.4	29.73 755.1	29.65 753.1	29.67 753.6	29.48 748.8

b Means.

Godthaab, 64° 10′ 48″ N., 51° 43′ 30″ W.	1886–1883	b 29.45 748.0	29.52 749.8	29.71 754.6	29.79 756.6	29.85 758.2	29.78 756.4	29.77 756.1	29.78 756.4	29.72 754.9	29.65 753.1	29.67 753.6	29.51 749.5

b Means.

Jacobshavn, 69° 13′.2 N., 51° 2′ W.	1866–1883	b 29.57 751.1	29.66 753.4	29.82 757.4	29.89 759.2	29.90 759.4	29.79 756.6	29.76 755.9	29.79 756.6	29.74 755.4	29.72 754.9	29.75 755.6	29.60 751.8

b Means.

Upernivik, 72° 47′.5 N., 55° 53′.5 W.	1875–1883	b 29.60 751.8	29.69 754.1	29.87 758.7	29.98 761.7	29.92 760.0	29.84 757.9	29.78 756.4	29.81 757.2	29.74 755.4	29.75 755.6	29.75 755.6	29.69 754.1

b Means.

Port Bowen	1824									29.689	29.962	29.899	29.869
	1825	29.762	29.887	30.108	30.068	30.051	29.889	29.817	29.683				
Port Leopold	1848									29.738	29.840	29.845	29.693
	1849	29.817	29.823	29.906	29.958	29.988	29.838	29.671	29.680				
Griffith Island	1850									a29.684	29.946	29.911	29.839
	1851	29.732	29.832	29.847	30.077	29.994	29.985	29.805	b29.870				
Northumberland Sound.	1852									29.778	29.939	30.047	29.886
	1853	29.696	30.050	30.079	30.022	29.910	29.715	29.610	29.658				
Wellington Channel.	1853									29.741	29.791	29.721	29.810
	1854	29.614	29.716	29.837	30.005	29.980	29.756	29.638	c29.730				
Beechy Island	1852								29.741	29.831	29.965	30.093	29.918
	1853	29.903	30.195	30.341	30.335	30.341	30.163	29.997	29.882	29.885	29.911	29.822	29.900
	1854	29.760	29.848	29.926	30.094	30.057	29.855	29.744	d29.801				
Means		29.755	29.907	30.006	30.080	30.046	29.886	29.755	29.745	29.768	29.908	29.905	29.845
Means in millimeters		755.8	759.6	762.1	764.0	763.2	759.1	755.8	755.5	756.1	759.6	759.6	758.1

a For 19 days. b For 10 days. c For 23 days. d For 27 days.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Winter Island	1821								29.700	29.880	29.720	29.980	29.760
	1822	29.790	29.590	29.690	29.740	29.830	29.720	29.530					
Repulse Bay	1846										[a]29.860	29.931	30.060
	1847	29.794	30.149	30.174			[b]29.732	29.921					
Marble Island	1884									29.897	29.865	29.854	29.891
	1885	29.757	30.125	30.069	30.131	30.093	29.916	29.688	[c]29.592				
Means		29.780	29.955	29.978	29.936	29.961	29.805	29.713	29.676	29.888	29.808	29.922	29.903
Means in millimeters		756.40	760.85	761.42	760.36	761.00	757.04	754.70	753.75	759.14	757.11	760.00	759.53

[a] For 19 days. [b] For 11 days. [c] For 9 days.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Culloden (elevation 104 feet), 57° 29′ N., 4° 08′ W.	1841–1880	[b] 29.591	29.676	29.705	29.764	29.818	29.779	29.752	29.737	29.750	29.637	29.689	29.648
		751.6	753.8	754.5	756.0	757.4	756.4	755.7	755.3	755.6	752.7	754.1	753.0

[b] Means.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Sabine Island	1869								760.6	758.40	758.6	756.0	756.9
	1870	756.5	761.4	766.2	758.6	758.8	759.9	754.6					
Jan Mayen	1882							754.0	754.0	752.8	756.4	752.1	759.2
	1883	747.0	744.0	761.4	755.9	756.5	760.4	760.8					
Means		751.8	752.7	763.8	757.2	757.6	760.2	756.5	757.3	755.6	757.5	754.0	758.0
Means in millimeters		29.599	29.634	30.071	29.812	29.827	29.930	29.784	29.815	29.749	29.823	29.686	29.843

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North Unst	1861–1880	[b] 29.654	29.697	29.740	29.863	29.907	29.892	29.833	29.820	29.767	29.712	29.730	29.692
		753.2	754.3	755.4	758.5	759.6	759.2	757.8	757.4	756.1	754.7	755.1	754.2

[b] Means.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
H. M. S. *Blossom* (north of 66th parallel)	1826							[a]29.896	29.732	29.714	[b]29.521		
Camden Bay	1853									[c]29.891	29.879	30.301	29.801
	1854	30.120	29.989	29.981	29.866	29.827	29.854	29.836					
Point Barrow	1881										[d]29.758	29.894	29.858
	1882	29.836	29.725	30.070	29.980	30.080	29.880	29.804	29.811	29.812	29.898	29.828	30.118
	1883	29.965	30.218	30.028	30.027	29.881	29.941	29.883	[e]29.763				
Means		29.974	29.977	30.026	29.958	29.929	29.892	29.847	29.769	29.790	29.808	30.008	29.926
Means in millimeters		761.3	761.4	762.6	760.9	760.2	759.2	758.1	756.1	756.6	757.1	762.2	760.1

[a] For 11 days. [b] For 15 days. [c] For 16 days. [d] For 14 days. [e] For 27 days.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
St. Michael's,[a] 63° 28′ N., 161° 48′ W.	1874–1885	[b] 29.777	29.996	29.889	29.861	29.810	29.838	29.862	29.799	29.703	29.725	29.751	29.813
		756.3	761.9	759.2	758.5	757.2	757.9	758.5	756.9	754.5	755.0	755.7	757.2

[a] For 11 years, from July 1, 1874, to June 30, 1885. [b] Means.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Fort Alexander	1881								30.026	29.840	29.837	29.733	29.659
	1882	29.636	29.768	30.078	30.011	29.879	29.808	29.892	29.788	29.651	29.561	29.542	29.509
	1883	29.571	30.243	29.703	29.670	29.666	[a]29.878						
	1884						[b]29.942	29.887	29.794	29.775	29.684	29.446	29.882
	1885	29.669	29.762	29.803	29.708	29.782	29.905						
Means		29.625	29.924	29.861	29.796	29.776	29.875	29.593	29.869	29.755	29.694	29.574	29.683
Means in millimeters		752.5	760.0	758.5	756.8	756.3	758.8	751.6	758.7	755.8	754.2	751.2	753.9

[a] For 19 days. [b] For 16 days.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
St. Paul's Island, 50° 9′ N., 170° 18′ W.	1872	----	----	----	----	----	----	----	----	29.773	29.512	29.458	29.488
	1873	29.953	29.507	29.768	29.769	29.827	29.814	29.934	29.894	29.588	29.326	29.492	29.442
	1874	29.546	29.734	29.862	29.702	29.735	29.672	29.880	29.917	29.704	29.638	29.548	29.374
	1875	29.681	29.411	29.934	30.035	29.749	29.711	29.911	29.789	29.725	29.585	30.184	29.931
	1876	29.630	30.045	30.111	29.856	29.641	29.799	29.799	29.907	----	----	----	----
	1878	----	----	----	----	29.711	29.819	29.689	29.777	29.654	29.685	29.193	29.404
	1879	29.528	30.010	29.546	29.687	29.905	----	----	----	----	----	----	----
	1881	----	----	----	----	----	29.805	29.965	29.950	29.704	29.660	29.648	29.648
	1882	29.346	29.832	30.077	30.047	29.885	29.806	29.830	29.894	29.671	29.575	29.470	29.712
Means	----	29.614	29.756	29.883	29.849	29.779	29.775	29.858	29.875	29.688	29.569	29.570	29.571
Means in millimeters	----	752.2	755.8	759.0	758.2	756.4	756.3	758.4	758.8	754.1	751.0	751.1	751.1

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Sitka, 57° 3′ N., 135° 19′.5 W.	1881 1886	[b] 29.865	29.799	29.872	29.878	29.915	29.928	30.040	29.978	29.834	29.780	29.701	29.679
		758.56	756.88	758.73	758.88	759.83	760.15	763.00	761.42	757.77	756.40	754.45	753.83

[b] Means.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Unalaska, 53° 52′.6 N., 166° 31′.6 W.	([a])	[b] 29.562	29.654	29.658	29.703	29.701	29.764	29.829	29.836	29.665	29.575	29.568	29.637
		750.9	753.2	753.3	754.4	751.9	756.0	757.6	757.8	753.5	751.2	751.0	752.8

[a] For 14¾ years. [b] Means.

Station.	Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Honolulu, 21° 18′ N., 157° 55′ W.	1875	----	30.027	30.110	30.068	30.146	----	----	----	----	30.075	30.060	30.108
	1876	30.010	30.080	30.030	30.113	30.138	30.137	30.109	30.080	30.050	30.030	30.027	30.060
	1877	30.040	30.110	30.076	30.163	30.110	30.180	30.164	30.134	----	----	----	----
	1883	----	----	----	----	----	----	30.080	30.087	30.070	30.053	29.988	29.931
	1884	30.037	29.958	30.077	30.031	30.073	30.097	----	30.042	30.070	----	----	----
	1885	----	----	----	----	----	----	----	30.000	30.052	30.057	30.128	30.100
	1886	30.012	30.051	30.113	30.035	----	----	----	----	----	----	----	----
Means	----	30.025	30.045	30.081	30.082	30.117	30.138	30.118	30.069	30.060	30.054	30.051	30.050
Means in millimeters	----	762.6	763.1	764.0	764.1	765.0	765.5	765.0	763.7	763.5	763.4	763.3	763.3

Locality.	Latitude.	Longitude.	No. of years.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
	° ′	° ′														
Görz	45 56 N.	13 38 E.	10	756.0	754.4	752.6	751.2	752.3	753.3	753.1	752.9	754.4	753.9	752.4	753.3	753.4
Bangkok	13 38 N.	100 27 E.	10	761.6	760.4	759.6	758.3	757.2	756.7	756.9	757.0	757.1	758.9	761.4	762.1	758.9
Bayreuth	49 57 N.	11 35 E.	49	731.4	731.9	729.1	729.6	730.1	731.1	731.6	731.4	732.4	731.6	730.6	731.0	731.0
Berlin	52 31 N.	13 23 E.	30	758.1	757.5	755.5	756.1	756.8	757.2	756.9	757.0	758.0	757.2	756.5	757.8	757.0
Trebizond	41 1 N.	39 45 E.	2	760.6	761.2	761.0	760.5	760.9	759.6	759.2	759.2	760.7	764.1	764.0	763.1	761.2
Breslau	51 7 N.	17 00 E.	51	750.1	749.4	747.9	747.4	748.0	748.3	748.4	748.6	749.7	749.4	748.7	750.1	748.8
Dresden	51 3 N.	13 44 E.	16	751.0	751.7	747.9	750.4	750.3	750.6	750.6	750.7	751.7	750.9	750.0	751.3	750.6
Rome	41 54 N.	12 28 E.	26	763.3	762.7	760.5	761.2	761.2	761.5	762.5	761.7	763.1	762.4	761.0	761.7	761.9
Vienna	48 14 N.	16 20 E.	100	+1.6*	+0.9	—0.8	—1.6	—1.7	—0.6	—0.5	0.0	+0.9	+0.7	+0.2	+0.9*	----
Prague	50 5 N.	14 26 E.	40	745.0	744.0	742.3	742.1	742.5	743.3	743.4	743.6	744.8	743.7	743.6	745.2	743.6
Czernowitz	48 17 N.	25 57 E.	16	741.6	741.8	738.1	737.0	737.6	737.5	737.8	737.9	739.3	740.6	738.9	738.4	738.9
Erfurt	50 59 N.	11 2 E.	20	744.1	745.0	741.9	743.1	743.4	744.4	744.3	744.0	744.8	744.0	743.5	744.6	743.9
Altona Hamburg	53 33 N.	10 50 E.	9	762.4	762.1	760.0	760.7	760.9	761.5	761.3	760.8	760.1	759.5	758.7	759.6	760.6
Lisbon	38 43 N.	9 8 W.	20	757.2	756.4	753.9	754.2	753.5	755.2	755.2	754.6	755.0	754.3	754.3	756.7	755.0
Brussels	50 51 N.	4 22 E.	32	756.6	756.2	756.2	755.2	755.8	756.4	756.7	756.5	756.7	755.2	754.9	757.6	756.2
Geneva	46 12 N.	6 9 E.	50	727.4	726.8	725.0	724.8	725.2	727.2	727.6	727.7	727.6	726.5	725.8	728.0	726.6
Cracow	50 4 N.	19 57 E.	50	743.8	742.9	741.1	740.8	741.4	742.0	742.1	742.4	743.8	743.5	742.7	743.8	742.5
Lyons	45 45 N.	4 49 E.	16	746.3	747.4	742.9	744.6	744.0	745.7	745.9	745.4	746.1	745.6	745.3	746.8	745.5
Oviedo	42 23 N.	5 52 W.	18	742.8	743.4	741.8	741.7	740.9	743.7	744.5	743.8	743.2	742.6	741.3	742.9	742.7
Santiago	42 53 N.	8 30 W.	13	741.1	741.3	738.2	737.6	737.2	739.9	740.5	740.1	739.4	739.0	738.4	739.8	739.4

*Departures in millimeters from annual mean.

Locality.	Latitude.	Longitude.	No. of years.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
	° ′	° ′														
Bodenbach	50 46 N.	14 12 E.	46	750.5	750.0	748.3	747.9	748.5	748.9	748.9	749.1	750.2	749.8	749.3	751.2	749.4
Innsbruck	47 16 N.	11 23 E.	40	707.5	707.5	706.7	705.7	706.8	708.3	707.5	707.6	709.3	708.3	706.6	707.4	707.4
Gibraltar	36 6 N.	5 21 W.	14	765.7	764.4	762.4	763.2	761.9	763.2	762.8	762.0	763.5	763.3	762.9	765.5	763.4
San Fernando	36 28 N.	6 12 W.	16	764.0	763.1	760.5	760.9	760.1	761.6	761.3	760.8	761.6	761.3	761.0	764.1	761.7
Saragossa	41 39 N.	1 00 W.	7	746.2	745.8	741.6	742.9	741.5	743.5	743.8	743.0	742.9	743.0	743.4	744.8	743.5
Valladolid	41 39 N.	4 47 W.	7	703.2	704.3	699.7	702.0	700.2	703.1	703.5	702.6	702.6	701.9	701.0	702.4	702.2
Leipzig	51 20 N.	12 30 E.	40	751.9	751.4	750.5	750.5	750.9	751.7	752.0	751.7	752.2	751.5	750.6	752.3	751.4
Murcia	37 59 N.	1 7 W.	5	761.7	762.5	757.2	759.4	758.8	759.5	759.0	758.8	760.0	758.0	760.0	761.6	759.7
Triest	45 39 N.	13 47 E.	33	760.0	759.7	757.6	757.7	757.6	758.4	758.2	758.5	759.8	759.0	758.8	760.5	758.8
Nice	43 41 N.	7 6 E.	14	762.0	761.5	759.3	760.3	760.1	761.2	760.7	760.7	761.8	760.6	760.3	761.7	760.9
Guarda	40 32 N.	7 16 W.	9	675.6	676.9	672.5	675.1	674.0	677.2	677.4	677.1	676.8	675.1	675.0	675.5	675.7
Athens	37 58 N.	23 43 E.	3	757.9	755.7	754.1	753.4	753.1	753.4	751.8	752.8	754.5	757.4	756.7	753.5	754.5
Arva-Varalja	49 16 N.	37 2 E.	20	718.5	717.5	715.3	716.5	716.7	717.5	717.5	717.7	719.2	718.3	717.3	718.2	717.5
Datschitz	49 5 N.	15 26 E.	8	720.2	720.8	716.7	720.2	720.8	721.2	721.1	721.0	722.7	720.8	719.5	720.8	720.5
Upsala	59 52 N.	17 38 E.	18	756.1	755.7	755.3	756.3	757.3	756.7	755.1	755.8	756.4	756.6	756.3	755.6	756.1
Pau	43 17 N.	20 W.	15	743.7	744.0	742.0	742.2	741.7	743.5	743.7	743.0	743.0	742.0	742.5	744.7	743.0
Oxford	51 46 N.	1 16 W.	25	754.4	755.7	753.5	754.8	755.3	755.9	755.7	755.0	754.9	753.6	754.5	754.9	754.8
Zi-ka-wei	31 12 N.	12 26 E.	8	771.3	768.9	766.4	762.4	758.3	755.8	754.1	755.5	759.4	765.1	768.2	769.4	762.9
Kremsmünster	48 3 N.	14 8 E.	40	729.2	728.6	727.3	726.5	727.0	728.2	728.8	728.7	729.3	728.8	728.4	730.1	728.4
Singapore	1 17 N.	103 50 E.	1	760.9	761.3	761.0	759.3	758.8	759.2	758.9	759.6	759.7	759.0	758.7	758.6	759.6
Bozen	46 31 N.	11 21 E.	28	738.4	737.2	734.8	734.5	735.0	735.9	735.8	735.6	737.4	737.3	737.2	739.0	736.5
Budapest	47 30 N.	19 2 E.	16	751.0	750.3	745.7	747.0	747.2	747.5	747.6	747.8	749.5	749.4	748.9	749.9	748.5
Praia Santiago	14 54 N.	23 31 W.	5	758.9	758.9	758.7	758.6	758.9	759.7	758.8	758.1	758.0	758.1	758.2	758.6	758.6
Ratibor	50 6 N.	18 13 E.	32	744.9	743.5	741.1	741.0	741.6	742.2	742.1	742.2	744.2	743.5	742.8	744.4	742.8
Königsberg	54 42 N.	20 30 E.	32	760.2	758.8	757.6	758.3	758.8	758.6	757.8	758.3	759.7	759.5	758.4	759.2	758.8
Madrid	40 25 N.	3 43 W.	10	708.3	708.8	704.3	705.9	705.3	707.2	707.1	707.2	707.6	708.9	706.8	708.3	707.0
Ladó	5 2 N.	31 50 E.	1	718.0	717.0	717.1	717.5	718.0	719.5	719.8	720.6	720.3	718.8	719.3	718.1	718.7
Barnaul	53 20 N.	82 47 E.	19	+7.8*	+6.1	+4.8	+0.5	−3.1	−7.9	−10.0	−6.8	−2.2	+1.4	+4.2	+5.2*	749.3
Krasnojarsk	56 1 N.	92 53 E.	10	+5.8*	+4.9	+2.6	−0.9	−4.8	−7.6	−8.1	−4.5	−0.8	+1.4	+4.9	+6.7*	758.2
Irkutsk	52 16 N.	104 5 E.	15	+6.7*	+5.3	+2.8	+2.0	−4.0	−6.4	−8.1	−6.3	−1.7	+1.9	+3.7	+4.2*	724.2
Nertschinsk	51 19 N.	119 6 E.	18	+5.2*	+4.2	+3.0	−2.4	−3.9	−4.9	−4.9	−2.8	−0.2	+1.9	+2.5	+2.3*	705.0
Jerusalem	31 46¾ N.	35 13 E.	18*	697.7	696.6	695.4	695.3	695.6	694.7	692.7	693.4	695.4	697.3	697.6	697.7	695.8
Greenwich	51 28 N.	0 00	11	755.9	757.6	753.1	756.7	756.7	757.2	757.3	756.3	756.7	754.9	756.7	758.3	756.4
Copenhagen	55 41 N.	12 35 E.	11	758.8	760.3	756.3	759.7	760.6	759.8	758.4	758.8	760.4	760.0	759.9	760.6	759.5
Aberdeen	57 9 N.	2 7 W.	11	751.8	755.1	752.2	756.7	757.7	757.0	755.9	754.7	754.2	753.4	755.6	754.5	754.9
Mandal	58 2 N.	7 27 E.	8	755.2	756.6	755.0	758.3	759.4	758.0	756.0	755.9	756.8	757.2	756.0	756.9	756.8
Skudêsnes	59 9 N.	5 16 E.	8	754.7	756.6	755.5	759.3	760.3	759.2	756.7	756.1	756.9	756.8	756.3	756.6	757.1
Bergen	60 24 N.	5 20 E.	8	752.7	754.2	753.7	757.5	758.4	757.7	755.7	754.9	755.6	755.3	754.5	754.4	755.4
Aalesund	62 29 N.	6 9 E.	8	752.5	754.1	754.2	758.0	759.5	758.3	756.4	755.6	756.1	755.3	754.7	753.8	755.7
Christiansund	63 7 N.	7 45 E.	8	750.4	751.7	752.3	756.0	758.0	756.6	754.6	754.1	754.4	753.5	752.6	751.4	753.8
Haparanda	65 50 N.	24 11 E.	7½	753.4	757.2	756.2	758.2	757.9	757.7	754.2	755.4	756.3	756.7	756.2	755.0	756.2
Alten	69 57 N.	23 2 E.	11	754.7	753.2	755.8	758.3	759.3	757.0	756.4	757.1	756.2	754.3	753.6	753.4	755.8
Hammerfest	70 40 N.	23 46 E.	13	749.7	745.9	752.2	755.0	756.9	755.1	755.0	753.9	753.1	751.0	751.7	748.7	752.3
Teneriffe	28 12 N.	16 21 W.	5	719.0	717.7	716.7	717.2	717.8	718.6	718.4	718.1	718.3	718.5	718.0	718.8	718.1
Hanau	50 8 N.	8 55 E.	29	754.6	753.8	752.2	752.9	753.2	754.5	755.1	754.0	755.6	754.0	754.0	755.7	754.1
Oporto	41 8 N.	8 37 W.	9	755.9	756.6	752.3	754.3	752.8	755.4	755.2	754.8	754.7	754.2	754.4	756.1	754.7
Campo Major	39 1 N.	7 5 W.	9	739.6	739.8	735.3	737.2	736.0	737.8	737.4	737.2	737.9	737.4	738.0	739.4	737.7
Lagos	37 7 N.	8 25 W.	7	765.1	765.0	760.1	762.3	760.8	762.2	761.9	761.6	762.0	762.8	762.5	763.7	762.5
Angra	38 36 N.	27 15 W.	8	760.3	760.2	759.9	760.0	760.1	763.3	763.9	763.0	761.6	761.6	758.4	759.7	761.0
Ponta Delgada	37 41 N.	25 55 W.	7	764.2	763.8	762.5	763.3	763.4	766.9	767.1	766.5	765.1	765.5	762.3	763.5	764.5
Funchal	32 38 N.	16 55 W.	8	764.9	763.8	761.5	762.1	762.3	763.8	763.8	762.7	762.8	762.7	762.3	763.4	763.0
St. Martin de Hinx	43 47 N.	11 7 W.	10	760.2	762.3	758.6	759.6	758.6	761.3	761.4	760.6	760.1	759.7	760.0	760.8	760.3
Pola	44 52 N.	13 51 E.	10	759.1	760.8	755.1	758.6	758.5	758.5	758.4	758.2	760.4	758.7	758.9	759.2	758.7
Ancona	43 38 N.	13 31 E.	5	762.3	763.9	758.3	761.7	761.6	761.5	761.3	761.1	763.4	761.9	762.1	762.5	761.8
Chur	46 51 N.	9 31 E.	15	710.2	710.5	706.1	708.8	708.8	710.3	711.2	711.2	711.6	710.1	709.4	710.8	709.9
Gondokoro	4 55 N.	31 28 E.	1	720.3	718.9	719.3	720.1	722.0	723.3	723.1	722.4	722.3	721.7	721.2	721.2	721.3
Khartoum	15 36 N.	32 36 E.	1	726.1	725.7	724.9	724.5	724.0	723.5	723.8	723.4	723.7	724.6	725.4	725.8	724.6
Eger	50 5 N.	12 22 E.	11	720.8	721.4	718.0	720.1	720 4	721.9	721.7	721.5	722.7	720.5	720.1	720.7	720.8
Peking	39 57 N.	116 29 E.	14	+9.0*	+7.1	+3.0	−1.6	−5.6	−9.5	−10.7	−7.7	−1.9	+3.0	+6.7	+8.3*	759.2
Hakodadi	41 47 N.	140 8 E.	4½	−0.6*	+1.3	+3.5	+1.0	−1.0	−3.7	−3.8	−3.1	−0.5	+2.0	+2.2	+2.8*	756.5
Ajan	56 4 N.	138 4 E.	4	+0.1*	+1.7	+3.9	+2.7	−1.0	−2.4	−3.8	−0.8	−0.5	+1.8	+1.5	+3.3*	756.5
Sitka	57 0 N.	135 0 E.	17	−4.1*	−1.8	−1.7	−0.1	+3.1	+2.5	+4.1	+3.5	+1.3	−2.3	−2.5	−2.1*	754.7
Port Said				764.0	764.6	760.3	760.7	759.6	758.3	756.2	756.9	759.4	761.6	763.3	763.2	760.7
Ismailia	29 58 N.	32 34 E.	2	763.6	764.0	759.6	760.0	759.4	757.5	755.2	755.6	758.1	761.1	763.1	762.6	760.0
Suez				764.4	765.2	760.4	760.4	759.5	758.6	756.6	757.2	759.3	762.0	764.0	763.8	760.9
Utrecht	52 5 N.	5 7 E.	30	760.2	760.7	759.7	759.7	760.1	760.8	760.7	760.5	760.7	759.0	759.3	760.4	760.2
Manila	14 35 N.	120 56 E.	8	756.8	757.1	756.7	756.6	755.1	754.6	754.4	753.4	753.9	754.7	755.5	756.6	755.5
Tokio	35 41 N.	139 47 E.	7	763.7	763.0	762.3	762.2	760.2	758.6	758.5	759.1	760.3	763.5	763.8	763.0	761.7
Constantinople	41 0 N.	28 59 E.	6	758.6	755.6	756.3	755.5	755.1	755.2	754.1	754.1	756.5	756.8	757.4	758.8	756.2
Cairo	29 59 N.	31 18 E.	10	+3.1*	+3.1	+0.2	−0.5	−1.2	−2.3	−4.0	−3.9	−1.0	+0.9	+2.2	+3.2*	761.2

* From 1864 to 1881.　　† Departures in millimeters from annual mean.

Locality.	Latitude.	Longitude.	No. of years.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
	° ′	° ′														
Red Sea	26 5 N.	34 16 E.	1	767.4	766.5	763.5	762.8	762.2	759.4	758.5	757.9	759.2	763.1	764.2	765.7	762.5
Yarkand	38 25 N.	77 16 E.	2	665.5	659.7	657.2	657.6	656.4	653.7	651.4	654.2	659.5	663.9	665.0	662.7	658.7
Gondar	12 36 N.	37 32 E.	†7	592.8	591.9	591.1	591.0	------	------	------	------	------	592.1	592.2	592.2	------
Nicholaievsk	53 8 N.	140 43 E.	11	759.3	759.9	759.2	756.6	755.4	753.4	753.3	754.0	757.1	757.5	757.6	757.9	756.8
Leh	34 10 N.	77 36 E.	1	496.0	494.8	493.4	498.6	498.0	496.8	496.7	497.0	498.0	499.3	500.4	499.6	497.4
Alexandria	31 12 N.	29 54 E.	10	+2.5*	+2.8	+0.7	−0.4	−1.0	−2.0	−4.1	−3.6	−0.8	+1.4	+1.9	+2.6*	------
Hong-Kong	22 16 N.	114 10 E.	8	766.3	765.3	763.6	760.7	758.5	756.2	755.0	754.8	756.7	761.3	764.8	765.7	760.7
Canton	23 18 N.	113 17 E.	10	768.1	766.3	764.8	761.0	759.2	758.7	756.9	756.9	757.4	762.7	766.3	767.1	762.1
Singapore	1 17 N.	103 50 E.	3	760.1	759.9	759.8	758.7	758.6	759.3	758.9	759.0	759.2	759.0	759.1	759.1	759.2
Simla	31 6 N.	77 11 E.	3	590.1	589.4	589.3	589.6	588.0	585.9	585.8	586.6	589.0	591.1	591.5	590.5	588.9
Smyrna	38 26 N.	27 10 E.	9	762.7	761.2	758.3	760.0	759.3	757.8	756.2	756.1	759.6	761.5	761.8	762.0	759.7
New-Chwang	40 57 N.	121 27 E.	1	773.7	770.8	768.9	762.3	761.9	757.6	757.6	760.2	765.4	768.8	768.4	771.0	765.5
Tiflis	41 42 N.	44 48 E.	11	725.0	723.8	723.0	721.5	721.3	719.6	718.5	720.0	722.9	726.4	726.4	725.5	722.8
Peking	39 57 N.	116 29 E.	23	768.3	766.6	762.5	757.9	753.6	750.3	749.0	751.6	757.5	762.3	766.0	767.2	759.4
Bogoslovsk	59 45 N.	60 1 E.	11	744.9	744.3	743.1	744.5	743.7	742.0	740.8	741.5	743.7	744.9	746.0	747.6	743.9
Obdorsk	66 31 N.	66 35 E.	2	754.2	758.1	758.4	765.6	759.6	759.4	755.4	757.5	757.2	756.9	762.5	760.7	758.8
Olekminsk	60 22 N.	120 26 E.	3	756.8	757.4	753.4	747.3	744.7	741.9	740.8	742.9	748.2	750.4	753.7	756.2	749.5
Beresow	63 56 N.	65 4 E.	6	759.3	760.7	753.8	760.8	758.8	757.0	753.4	754.4	758.0	756.0	756.5	760.4	757.4
Nova Zembla	Ab't 76 N.	59 E.	7	750.5	756.7	755.6	763.8	761.6	755.8	758.7	757.3	755.4	759.2	762.2	761.9	758.2
Do			5	752.0	752.8	752.7	762.2	762.6	758.2	756.2	757.1	756.3	757.8	760.0	759.8	757.3
Turukhansk	65 55 N.	87 38 E.	7	765.5	762.1	761.3	760.8	758.6	755.1	754.7	755.9	757.9	758.6	761.8	766.8	759.9
Mesen	65 50 N.	44 16 E.	2	747.8	755.0	762.1	762.0	755.7	758.2	754.2	756.2	757.0	750.8	758.2	753.1	755.9
Archangel	64 33 N.	40 32 E.	11	754.2	754.2	752.0	756.6	756.8	755.9	754.8	755.3	756.3	756.0	753.7	755.7	755.1
Vardö	70 22 N.	31 7 E.	10	748.9	751.8	750.0	756.0	757.5	756.2	755.8	755.0	754.9	753.1	752.1	751.6	753.6
Gjasvar	71 7 N.	25 22 E.	6	749.4	749.4	748.9	756.5	757.5	757.6	755.7	755.4	755.6	753.2	750.0	749.6	753.2
Tromsöe	69 39 N.	18 58 E.	10	749.4	750.8	749.8	755.8	756.8	756.0	754.9	754.3	753.9	752.8	751.0	750.6	753.0
Spitzbergen	79 53 N.	16 4 E.	3	747.8	748.0	754.4	758.3	760.2	754.9	752.8	756.3	753.5	754.5	754.2	756.4	754.3
Duī	50 50 N.	142 26 E.	2	750.1	748.8	747.7	745.8	745.9	746.2	746.1	746.2	748.3	749.3	747.0	748.9	747.5
Petropawlowsk	53 00 N.	158 39 E.	5	29.519	29.632	29.774	29.773	29.701	29.651	29.693	29.810	29.803	29.723	29.624	29.539	29.687
Okhotsk	59 20 N.	142 40 E.	7⅔	29.854	29.923	29.902	29.846	29.799	29.772	29.725	29.796	29.350	29.816	29.760	29.710	29.813
Behring Island	55 12 N.	165 55 E.	4	29.471	29.834	29.776	29.793	29.790	29.803	29.800	29.824	29.875	29.690	29.549	29.552	29.730
Werchojansk	67 34 N.	133 51 E.	2	753.6	757.6	755.6	741.8	730.4	724.8	------	------	------	------	748.4	746.9	------
Gydaviken	72 20 N.	77 00 E.	†10	759.7	764.6	754.0	757.8	755.3	759.3	759.2	------	------	758.0	746.6	760.0	757.5
Bermuda	32 23 N.	64 40 W.	12	764.7	765.0	762.9	762.6	762.8	765.3	765.6	764.5	763.8	762.6	762.7	764.6	763.9
Vera Cruz	19 12 N.	96 9 W.	4	764.6	763.0	761.1	761.0	759.3	759.3	761.2	761.7	761.3	761.5	763.8	764.1	761.8
Cordoba	18 51 N.	96 54 W.	5	690.4	689.0	688.3	687.7	687.4	688.0	689.2	689.1	688.8	689.[illegible]	[illegible]	690.8	689.0
Providence	41 50 N.	71 23 W.	27½	761.6	761.0	760.0	759.9	759.5	759.6	759.5	761.2	762.1	761.[illegible]	[illegible]	761.1	760.7
Belize	17 30 N.	88 18 E.	5	763.3	763.3	762.0	761.7	759.9	760.6	761.7	766.5	760.4	[illegible]	[illegible]	763.3	761.7
Caracas	10 31 N.	66 55 W.	3	684.2	684.0	683.9	683.8	683.7	684.5	684.5	684.0	683.6	682.9	682.9	683.7	683.8
Paramaribo	5 44 N.	44 59 W.	6	761.3	761.9	761.6	761.2	761.7	762.4	762.4	762.2	761.9	761.5	760.4	761.0	761.6
Guatemala	14 38 N.	90 31 W.	2	641.8	641.7	641.4	640.9	640.6	640.7	641.3	641.0	640.3	640.3	641.5	642.0	641.1
San José	9 56 N.	84 00 W.	11	668.2	668.4	668.4	668.5	668.2	668.3	668.3	668.2	668.1	667.8	667.8	668.0	668.2
St. Thomas	0 20 N.	6 43 E.	5	758.9	758.4	758.5	759.2	759.1	760.9	761.4	761.6	760.8	759.9	759.5	759.4	759.8
Toronto	43 39 N.	79 23 W.	42	29.641	29.632	29.619	29.585	29.579	29.567	29.551	29.620	29.662	29.645	29.621	29.649	29.614
Thorshavn	62 2 N.	6 44 W.	1	751.3	752.6	755.9	757.4	758.7	760.5	757.2	757.7	757.9	752.8	755.6	752.6	755.9
Stykkisholm	65 4 N.	22 43 W.	23	29.303	29.457	29.634	29.747	29.806	29.730	29.700	29.688	29.615	29.554	29.600	29.388	29.602
Anadyr	64 55 N.	177 19 E.	2	30.123	30.069	29.863	29.952	29.897	29.908	------	------	------	29.786	29.859	29.907	------
Pitlekaie	67 5 N.	173 23 W.	2	29.637	30.236	29.893	29.792	29.912	29.778	29.731	------	------	29.836	29.678	29.955	------

† Months.

* Departures in millimeters from annual mean.

ANNUAL FLUCTUATION OF THE ATMOSPHERIC PRESSURE AT FORT CONGER.

The following monthly mean values have been deduced from hourly readings from August 8, 1881, to August 7, 1883, inclusive, supplemented in the second column by a mean in which the observations of the English arctic expedition have been considered:

TABLE XXXV.—*Monthly mean barometric pressure (reduced to sea).*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881–'83.	1875–'76, 1881–'83.	Month.	1881–'83.	1875–'76, 1881–'83.
January	29.7958	**29.7556**	July	**29.7892**	**29.7249**
February	**.6720**	.7792	August	.8260	.8096
March	.8934	.9623	September	.7706	.7487
April	**30.0986**	**30.1747**	October	.8975	.9252
May	.0658	.0210	November	.8591	**.9709**
June	29.8782	29.8525	December	**.9216**	.8300

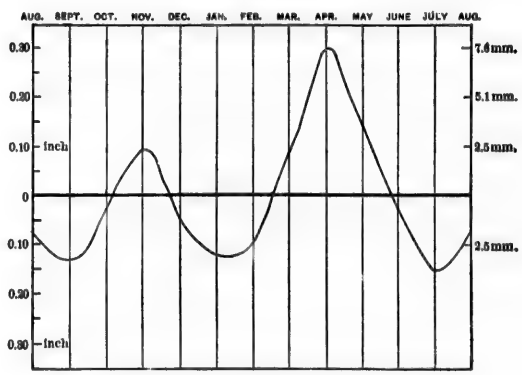
The principal maximum occurs in April, after which the pressure falls rapidly to the principal minimum in July. The secondary maximum and minimum follow regularly in November and February, respectively.*

The following chart is based on three years' observations, including those of 1875–'76:

CHART No. 5.—*Annual fluctuations of atmospheric pressure at Fort Conger.*

$\phi = +81° 44'$

(Departures in English inches.)



DIURNAL FLUCTUATION OF THE ATMOSPHERIC PRESSURE AT FORT CONGER.

The diurnal fluctuation.—The diurnal fluctuation for Fort Conger has been deduced from the continuous hourly readings of the mercurial barometer for 601 days, from December 16 to August 8, inclusive, 1883. A careful comparison of the aneroid readings from August to November, inclusive, 1881, with mercurial readings for similar hours, satisfactorily showed that although the daily means were identical, yet the hourly readings were not strictly comparable. The aneroid read slightly lower in the forenoon, and correspondingly higher in the afternoon, as follows:

3 a. m., +.002 inch [+.05^{mm}]; 7 a. m., +.006 inch [+.15^{mm}]; 11 a. m., +.001 inch [+.03^{mm}]; 3 p. m., —.001 inch [—.03^{mm}]; 7 p. m., —.004 inch [—.10^{mm}]; 11 p. m., —.004 inch [—.10^{mm}].

* From means by decades these occur as follows: First maximum, April 21–30; first minimum, July 21–31; second maximum, October 21–31; second minimum, February 11–20.

The following tables give the mean hourly barometer (to the sea) for 601 days from the 16th of December, 1881, to include August 8, 1883, for the 216 days during which the sun was absent, and also (in departures) for each month of the year:

TABLE XXXVI.—*Mean hourly barometric pressure* (*reduced to sea*).

Washington mean time. To reduce to local mean time add 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

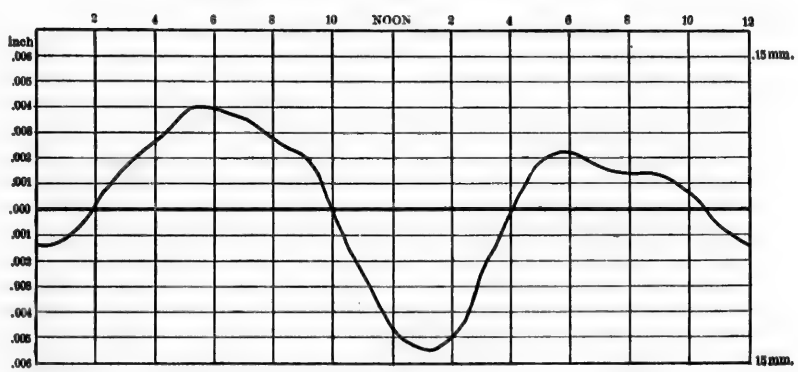
Hour.	601 days.	216 days.	Hour.	601 days.	216 days.
1 a. m	29.8875	29.8503	1 p. m	**29.8831**	**29.8435**
2 a. m	29.8891	29.8518	2 p. m	29.8838	29.8447
3 a. m	29.8905	29.8531	3 p. m	29.8863	29.8490
4 a. m	29.8925	29.8551	4 p. m	29.8887	29.8524
5 a. m	**29.8934**	**29.8555**	5 p. m	29.8905	29.8541
6 a. m	29.8933	29.8545	6 p. m	**29.8907**	**29.8542**
7 a. m	29.8921	29.8530	7 p. m	29.8901	29.8532
8 a. m	29.8912	29.8516	8 p. m	29.8900	29.8531
9 a. m	29.8907	29.8508	9 p. m	29.8899	29.8534
10 a. m	29.8885	29.8489	10 p. m	29.8891	29.8524
11 a. m	29.8859	29.8472	11 p. m	29.8880	29.8505
Noon	29.8837	29.8443	Midnight	**29.8873**	**29.8483**
Grand mean			inches	29.8886	29.8510
			millimeters	759.16	758.21

The double curve is plainly marked and is substantially the same during the presence or absence of the sun, and consequently for the whole period.

CHART No. 6.—*Diurnal fluctuations at Fort Conger*, 1881–'83.

$\phi = +81° 44'$.

Washington mean time. To reduce to local mean time add 49^m



The critical periods are:

First maximum between 5 and 6 a. m. (5.49 to 6.49 a. m. local mean time), +.0048 inch [$+0.124^{mm}$]
First minimum about 1 p. m. (1.49 p. m. local mean time), −.0055 inch [-0.14^{mm}]
Second maximum about 6 p. m. (6.49 p. m. local mean time), +.0021 inch [$+0.05^{mm}$]
Second minimum between 12 and 1 a. m. (12.49 to 1.49 a. m. local mean time), −.0007 [-0.02^{mm}]; amplitude, .0103 inch [0.26^{mm}].

On ascertaining at Fort Conger that the diurnal fluctuation was unchanged during the absence of the sun the thought occurred of examining other arctic barometers particularly with reference to the simultaneity of the phenomena.

Through the courtesy of Captains Wolhgemuth and Dawson, Assistant A. F. W. Paulsen, and chiefs of international polar stations in furnishing advance information as to diurnal fluctuations at their respective stations, the following table has been made possible:

TABLE XXXVII.—*Mean hourly barometric pressures, 1881-'83. Departures in English inches.*

Washington mean time. To reduce to local mean time add 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Hour.	Aug. (39 days).	Sept. (30 days).	Oct. (31 days).	Nov. (30 days).	Dec. (47 days).	Jan. (62 days).	Feb. (56 days).	Mar. (62 days).	Apr. (60 days).	May (62 days).	June (60 days).	July (62 days).
1 a. m	− .002	− .002	− .008	− .002	− .004	+ .003	+ .003	− .011	− .008	+ .001	+ .005	+ .005
2 a. m	.000	− .001	− .005	.000	− .001	+ .004	+ .002	− .009	− .005	+ .002	+ .006	+ .006
3 a. m	+ .002	+ .001	− .002	.000	+ .002	+ .007	+ .001	− .007	− .003	+ .004	+ .006	+ .007
4 a. m	+ .004	+ .006	+ .001	+ .003	+ .004	+ .009	+ .002	− .004	.000	+ .007	+ .006	+ .008
5 a. m	+ .005	+ .005	+ .001	+ .003	+ .006	+ .009	+ .001	.000	.000	+ .008	+ .007	+ .007
6 a. m	+ .007	+ .005	+ .003	+ .002	+ .004	+ .003	+ .001	+ .003	.000	+ .009	+ .006	+ .006
7 a. m	+ .007	+ .004	+ .002	.000	+ .002	+ .004	.000	+ .004	.000	+ .007	+ .004	+ .004
8 a. m	+ .005	+ .002	+ .003	.000	− .002	+ .004	− .002	+ .005	+ .001	+ .006	.000	+ .003
9 a. m	+ .004	.000	− .001	− .001	− .002	+ .001	.000	+ .005	+ .002	+ .008	.000	+ .002
10 a. m	.000	− .003	− .003	− .002	− .004	− .002	− .001	+ .004	+ .001	+ .005	− .003	− .002
11 a. m	− .003	− .006	− .003	− .004	− .004	− .004	− .003	+ .001	.000	+ .002	− .007	− .006
Noon	− .005	− .008	− .006	− .005	− .007	− .008	− .007	− .001	− .002	− .002	− .007	− .007
1 p. m	− .004	− .009	− .004	− .004	− .006	− .011	− .008	− .002	− .001	− .004	− .007	− .008
2 p. m	− .004	− .007	− .003	− .004	− .006	− .010	− .005	− .003	.000	− .004	− .006	− .007
3 p. m	− .003	− .004	− .001	− .003	− .002	− .005	− .001	+ .001	.000	− .004	− .005	− .004
4 p. m	− .003	+ .009	+ .002	+ .002	+ .001	− .001	+ .003	+ .003	+ .003	− .003	− .003	− .004
5 p. m	.000	+ .001	+ .005	+ .002	+ .004	+ .002	+ .002	+ .004	+ .003	− .003	− .002	− .002
6 p. m	+ .001	+ .003	+ .005	+ .003	+ .003	+ .001	+ .005	+ .005	+ .004	− .004	.000	.000
7 p. m	+ .001	+ .004	+ .005	+ .001	+ .004	.000	+ .001	+ .003	+ .003	− .005	.000	.000
8 p. m	+ .001	+ .003	+ .005	+ .002	+ .001	.000	+ .002	+ .002	+ .004	− .005	+ .001	+ .001
9 p. m	.000	+ .003	+ .003	+ .001	+ .002	+ .001	+ .003	+ .003	+ .003	− .006	+ .001	.000
10 p. m	− .002	+ .003	+ .001	.000	+ .002	− .001	+ .002	+ .002	+ .003	− .008	+ .001	.000
11 p. m	.000	.000	− .002	.000	.000	− .004	+ .002	+ .001	+ .002	− .007	+ .001	− .001
Midnight	.000	.000	− .002	+ .001	− .001	− .008	− .002	+ .001	+ .002	− .007	+ .002	− .002
Monthly means. inches	29.8165	29.7409	29.9038	29.9578	30.0098	29.7959	29.6720	29.8934	30.0985	30.0659	29.8782	29.7892
Monthly means. mms.	757.31	755.41	759.55	760.92	762.24	756.80	753.65	759.27	764.47	763.66	758.88	756.63

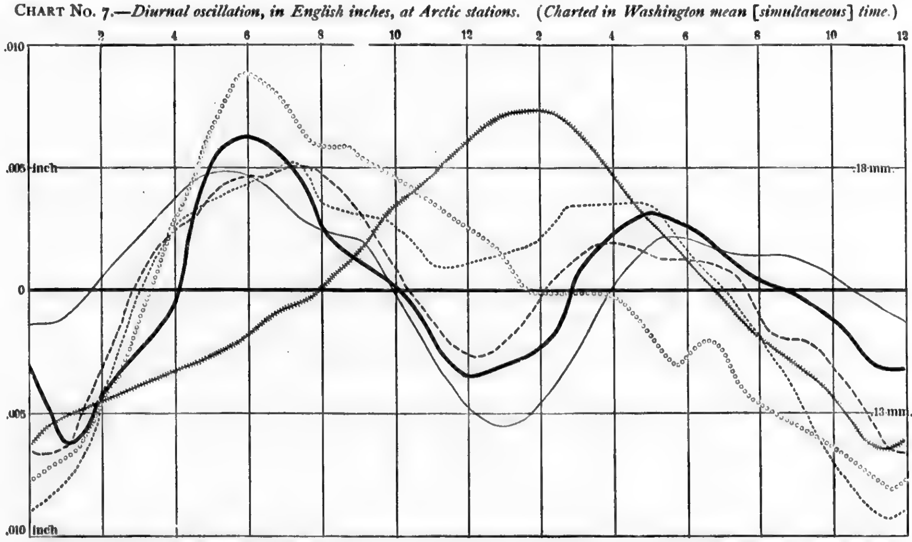
TABLE XXXVIII.—*Diurnal barometric fluctuations*; departures in English inches.*

Time.	Fort Conger. $\phi = +81° 44'$	Fort Rae. $\phi = +62° 39'$	Godthaab. $\phi = +64° 11'$	Jan Mayen. $\phi = +70° 59'$	Sagastyr. $\phi = +73° 23'$	Spitzbergen. $\phi = +78° 28'$	Point Barrow. $\phi = +71° 18'$
	Correction needed to reduce to Greenwich time.						
	$+4^h\ 19^m$	$+7^h\ 43^m$	$+3^h\ 27^m$	$+0^h\ 34^m$	$-8^h\ 16^m$	$-0^h\ 43^m$	$+10^h\ 45^m$
1 a. m	—.0011	—.0030	—.0040	—.0016	+.0030	+.0003	—.**0064**
2 a. m	+.0005	—.0021	—.0080	—.0020	+.0020	—.0015 —	—.0041
3 a. m	+.0019	—.0010	—.**0090**	—.0035	.0000	—.0038	—.0025 —
4 a. m	+.0039	—.0005 +	—.0060	—.0062	—.0000 +	—.0066	—.0008
5 a. m	+.**0048**	+.0010	—.0030	—.**0066**	.0000	—.0085	+.0055 +
6 a. m	+.0047	+.0030	—.0020	—.0051	—.0010	—.**0091**	+.**0062**
7 a. m	+.0035	+.0040	—.0000 +	—.0020	—.0030	—.0080	+.0051
8 a. m	+.0026	+.0054	+.0010	+.0008	—.0020	—.0049	+.0027
9 a. m	+.0021	+.0068	+.**0030**	+.0027	—.0040	—.0006	+.0011
10 a. m	—.0001	+.**0072**	+.0020	+.0043	—.0050	+.0020	.0000
11 a. m	—.0027	+.0071	+.0020	+.0047	—.0060	+.0036	—.0020
Noon	—.0049	+.0051	+.0020	+.**0051**	—.0070	+.0042	—.**0035**+
1 p. m	—.**0055**	+.0033	—.**0030**	+.0043	—.**0080**	+.**0048**	—.0031
2 p. m	—.0048	+.0020	—.0020	+.0027	—.0070	+.0038	—.0025 +
3 p. m	—.0023	+.0003	—.**0030**	.0000	—.0050	+.0032	+.0008
4 p. m	+.0001	—.0013	.0000	—.0016	—.0020	+.0028	+.0023
5 p. m	+.0019	—.0026	+.0020	—.**0027**	+.0020	+.0013	+.**0032**
6 p. m	+.**0021**	—.0036	+.0030	—.0016	+.0060	+.**0011**	+.0027
7 p. m	+.0015	—.0059	+.0040	+.0004	+.**0090**	+.0015 +	+.0015 +
8 p. m	+.0014	—.**0065**	+.0050	+.0016	+.0080	+.0019	+.0003
9 p. m	+.0013	—.0054	+.**0070**	+.**0020**	+.0060	+.0035 —	—.0002
10 p. m	+.0005	—.0051	+.**0070**	+.0012	+.0060	+.**0035**+	—.0010
11 p. m	—.0006	—.0041	+.0040	+.0012	+.0050	+.0035 —	—.0030
Midnight	—.**0013**	.0035	—.0000 +	+.0008	+.0040	+ 0020	—.0031

* Except at Point Barrow and Fort Conger, these values depend on one year's observations.

The general resemblance of these curves and the close coincidence of the critical hours when charted on simultaneous time is perhaps more evident in graphic than in tabular form. Possibly the similarity would have been more striking had the observations covered a longer period than a single year.

CHART No. 7.—*Diurnal oscillation, in English inches, at Arctic stations.* (*Charted in Washington mean [simultaneous] time.*)



Fort Conger, $\phi = +81° 44'$
Point Barrow, $\phi = +71\ 18$
Spitzbergen, $\phi = +78\ 28$
Jan Mayen, $\phi = +70° 59'$
Fort Rae, $\phi = +62\ 30$
Sagastyr, $\phi = +73\ 23$

The principal maximum, at about 11 a. m. Greenwich mean time, and the principal minimum,* near 6 a. m., occur simultaneously at these stations, followed regularly by secondary maximum and minimum at 10 p. m. and 6 p. m. respectively.

Fort Rae presents a striking exception to the rule of simultaneity, possibly because it was a continental station while the others were littoral. It has but one maximum and minimum, the latter, nevertheless, coincides with the principal minimum of the other stations. Captain Dawson has stated, however, that the season was an exceptional one, and the violent accidental fluctuations may have marked the diurnal oscillation. There is no obvious reason why there should be a single curve at Fort Rae alone of the American stations.

The abnormal character of the Fort Rae curve also seems probable from Sir John Richardson's observation at Fort Confidence, $\varphi = +66° 54'$, $\lambda = -118° 49'$ from November, 1848, to include April, 1849, which were published by Captain (now Sir and General) I. H. Lefroy.

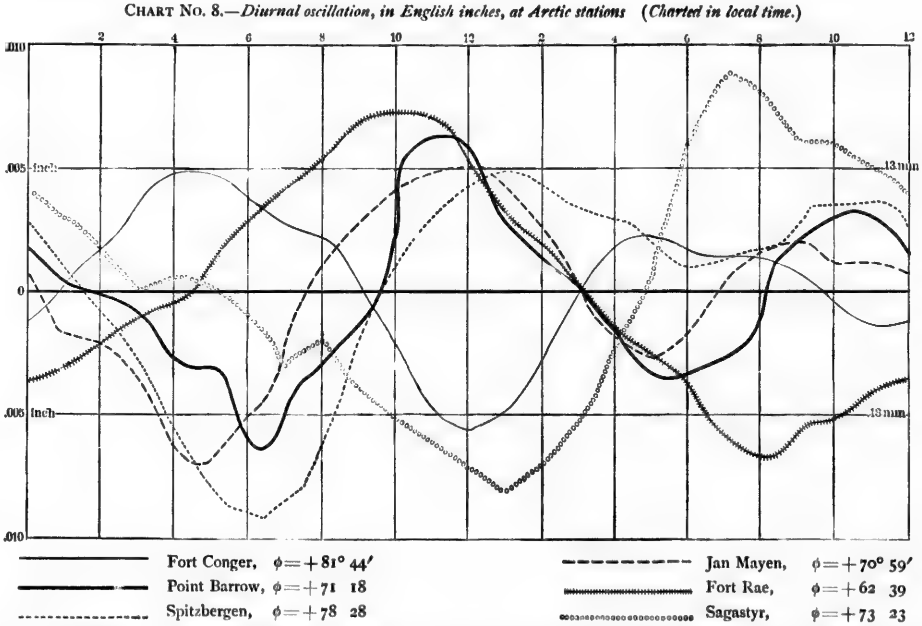
The departures in English inches from 7 a. m. local mean time to 9 p. m. are as follows:

Hour.	*Inch.*	*Hour.*	*Inch.*	*Hour.*	*Inch.*
7 a. m	—.006	Noon	—.000	5 p. m	.001
8 a. m	—.005	1 p. m	.001	6 p. m	.001
9 a. m	—.001	2 p. m	.002	7 p. m	—.002
10 a. m	—.002	3 p. m	.002	8 p. m	.006
11 a. m	—.001	4 p. m	.001	9 p. m	.003

These departures are in general keeping with the simultaneous curves when reduced to the same time, and indicate a double curve. It should be borne in mind, however, that Richardson's instruments were not as accurate as those of to-day, and further that these observations cover only six months.

The diurnal oscillation, charted on local time, is shown below:

CHART No. 8.—*Diurnal oscillation, in English inches, at Arctic stations* (*Charted in local time.*)



It is to be observed that when considered relative to local mean time, the same sign, either + or —, does not prevail at all stations for a single hour, but when discussed simultaneously similar signs prevail for thirteen hours, excluding Fort Rae.

It seems possible, then, that simultaneity in at least one of the components enters into this complex and but partly solved question of horary oscillations; further cannot now be said.

*At Fort Conger, however, the primary and secondary minimum occur in reverse order.

ANNUAL RANGE OF MEAN ATMOSPHERIC PRESSURE AT FORT CONGER.

The differences between the monthly means or the annual range is apparent from the following:

TABLE XXXIX.—*Departures from mean annual pressure in English inches.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

	Inch.		Inch.
January	—.124	July	—.154
February	—.100	August	—.070
March	+.083	September	—.131
April	+.295	October	+.046
May	+.141	November	+.091
June	—.027	December	—.050

The annual range of .449 inch [11.5^{mm}] depends on an excess of .2950 inch [7.51^{mm}] in April and a deficiency of .154 inch [3.91^{mm}] in July.

It thus appears that the annual range at Fort Conger is over forty times greater than the diurnal range. Schott, in the discussion of the observations at Port Foulke for 1860–'61, stated that the annual range at that station is twenty times greater than the diurnal range.

ABSOLUTE RANGES OF ATMOSPHERIC PRESSURE.

The extremes of pressure and absolute ranges appear in the following table:

TABLE XL.—*Maxima and minima pressures in English inches (reduced to the sea).*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881 and 1882.					1882 and 1883.					Mean range.
	Date and maximum.		Date and minimum.		Range.	Date and maximum.		Date and minimum.		Range.	
	Day of month.	Inches.	Day of month.	Inches.	Inches.	Day of month.	Inches.	Day of month.	Inches.	Inches.	Inches.
August	25	30.129	8	29.396	.733	7	30.107	9	29.459	**.648**	**.690**
September	4	30.250	10	29.047	1.203	18	30.179	21	29.273	.906	1.054
October	22	30.500	4	29.365	1.135	27	30.340	10	29.361	.979	1.057
November	12	30.207	6	29.222	.985	26	30.506	15	29.163	1.343	1.164
December	28	30.176	1	29.133	1.043	12	30.588	18	29.590	.998	1.020
January	3	30.229	16	*29.020	1.209	1	30.417	25	29.122	1.295	1.252
February	6	30.613	1	29.153	1.460	1	30.217	19	**28.968**	1.249	1.354
March	17	30.613	29	**28.988**	**1.625**	5	**30.779**	14	29.351	1.428	**1.526**
April	9	**31.000**	16	29.632	1.368	23	30.686	4	29.312	1.374	1.371
May	23	30.522	15	29.640	.882	8	30.687	30	29.474	1.213	1.048
June	1	30.362	16	29.416	.946	13	30.218	9	29.448	.770	.858
July	3	30.211	28	29.178	1.033	10	30.147	20	29.514	.633	.833
		31.000		28.988	2.012		30.779		28.968	1.811	
Absolute	....	31.000	....	28.968	2.032						

*5.45 p. m.

The absolute range was 2.012 inches [51.10^{mm}] 1881–'82, and 1.811 inch [45.98^{mm}] in the year following. The absolute range of 2.032 inches [51.61^{mm}] noted in these two years is to be further increased to 2.173 inches [55.19^{mm}]; from 31.000 inches [787.39^{mm}] April 9, 1882, at Fort Conger to 28.827* [732.19^{mm}]; February 17, 1872, at Polaris Bay, about 30 miles to the eastward. The absolute range at Van Rensselaer Harbor for 1853–'55, given by Schott as 2.130 inches [54.10^{mm}], is nearly identical.

From March with a range of 1.526 inches [38.62^{mm}] there is a steady and unbroken decrease to August, with a fluctuation of only .678 inch [17.22^{mm}].

The least ranges occur in summer, but the greatest ranges are peculiar in so far as they obtain in spring and not in winter.

* The introduction of this reading is justifiable from the fact that the barometer at Thank God Harbor was an instrument of the Signal Service, United States Army, and so its readings are comparable.

TABLE XLI.—*Daily ranges of atmospheric pressure*, 1881–'83.

Mean barometric ranges at Fort Conger.

$\varphi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881–'82.	1882–'83.	1881–'83.
	Inch.	*Inch.*	*Inch.*
August	.125	.103	.114
September	.160	.102	.131
October	.169	.143	.156
November	.161	.158	.160
December	.155	.173	.164
January	**.256**	.195	.226
February	.226	.234	.230
March	.249	**.316**	**.282**
April	.213	.185	.199
May	.130	.164	.147
June	**.111**	.123	.117
July	.131	**.082**	**.106**
Year	.174	.165	.170
Millimeters	4.42	4.19	4.32

From a minimum of .106 inch [2.69^{mm}] in July, the ranges increase uninterruptedly to the maximum, .282 inch [7.16^{mm}], in March. The decreasing curve is likewise unbroken. The minimum in July agrees in time with that of lower latitudes, at least as far as America* is concerned, but the maximum in March lags behind a couple of months.

The minimum ranges also occured in July, 1882–'83, at Fort Rae, Jan Mayen, and Sagastyr, but at Point Barrow (1882–'83) fell in June. The maximum ranges at Fort Rae, Jan Mayen, and Point Barrow came together in February, one month earlier than at Conger. The August maximum of Sagastyr is probably abnormal, as a longer series of observations may show.

TABLE XLII.—*Maxima and minima daily barometric ranges at Fort Conger*, 1881–'83.

$\Phi = +81° 44'$. $\lambda = -64° 45' = -4^h 19^m$

Date.	1881 and 1882.		1882 and 1883.	
	Maximum.	Minimum.	Maximum.	Minimum.
	Inch.	*Inch.*	*Inch.*	*Inch.*
August	.320	.030	.307	.032
September	.470	.050	.425	.023
October	.380	.040	.379	.023
November	.420	.030	.391	.050
December	.419	.044	.451	.033
January	.855	.077	.480	.068
February	.488	.077	.664	.056
March	.789	.042	.674	.068
April	.616	.031	.433	.040
May	.390	.024	.352	.034
June	.360	.022	.379	.041
July	.480	.024	.190	.026

The foregoing list clearly shows that the accidental daily variations are most violent from January to April, inclusive, and that the smallest daily variations occur during the presence of the sun, from April to October, inclusive.

That such violent changes should occur during the entire absence of the sun is a matter of special interest.

RAPID FLUCTUATIONS OF ATMOSPHERIC PRESSURE.

The following table, part of which was originally prepared as a check against errors of .05 inch [1.27^{mm}] (one division of the scale), is of interest in showing that from April to August, inclusive, no hourly change as great as .050 inch [1.27^{mm}] is to be expected at Conger, and that any hourly changes of that amount in other months may be looked on with suspicion if they are not corroborated with other extraordinary meteorological conditions.

All daily ranges exceeding .400 inch [10.16^{mm}] are assembled for convenience, as pointing out the most violent atmospheric disturbances.

*In the United States, as a rule, the mean minimum range occurs in July, and increases steadily to a maximum in January, although in New England the increase continues till February, and at some stations in the Mississippi Valley and Rocky Mountain region is attained in December. At Alaskan stations the maximum varies from November at Behring's Island and St. Michaels to February at Sitka.

TABLE XLIII.—*Hourly barometric changes greater than .050; also daily barometric ranges greater than .400 inch at Fort Conger.*

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

Dates.	Barometric changes.			Remarks.	Daily ranges greater than .400.	
	Time.	Rise.	Fall.		Date.	Range.
Aug., 1881	------	------	------	None during month; greatest —.05[a] on 26th.	------	------
Sept. 2, 1881	6 to 7 p. m.	.06[a]	------	Barometer rising slowly.	------	------
Sept. 10, 1881	1 to 2 a. m.	------	.09[a]	Other hourly changes greater than .05 during day. Severe storm. Wind at 9 a. m. north, 30 miles. Temperature rose from 7°.9, at 3 a. m., to 19°.4, at 4 a. m.	Sept. 10	.470
Sept. 10, 1881	8 to 9 a. m.	------	.09[a]			
Sept. 12, 1881	1 to 2 a. m.	.10[a]	------	Barometer rising rapidly at 2 a. m.; southwest wind, 23 miles.	------	------
Sept. 30, 1881	3 to 4 a. m.	------	.06[a]	3 p. m. reading probably .02 high.		
Oct. 17, 1881	8 to 9 a. m.	.06[a]	------	Barometer rising slowly.	------	------
Oct. 18, 1881	4 to 5 p. m.	.06[a]	------	Barometer rising slowly.	------	------
Nov. 5, 1881	6 to 7 a. m.	------	.06[a]	Barometer falling rapidly; wind southeast, 4 miles at 7 a. m.	------	------
Nov. 7, 1881	8 to 9 a. m.	.06[a]	------	Barometer rising slowly.		
Dec., 1881	------	------	------	Greatest changes 1st, —.05[a]; 11th, —.05[a]; 12th, —.05[a]; 31st, —.05[a]; —.042.	Dec. 31	.419
Jan. 15, 1882	4 to 5 p. m.	.063	------	Barometer rising rapidly.	Jan. 2	.404
Jan. 16, 1882	12 to 1 p. m.	------	.114	Hourly changes greater than .05 from 6 a. m. to 3 p. m. Storm of exceeding violence. Barometer fell .741 in nine hours. Wind reached registered velocity of northeast, 65 miles, at 2.15 p. m. Temperature rose from —.23°.4 at 11 a. m. to —13°.1 at 12 m. and subsequently to —.9.5°. Heavy swell observed in tide-hole.	Jan. 16	.855
Jan. 17, 1882	3 to 4 a. m.	.065	------	Barometer rising rapidly after storm of 16th.	Jan. 17	.631
Jan. 29, 1882	9 to 10 p. m.	------	.058	Barometer falling rapidly, —.246 from 9 p. m. to 2 a. m.		
Jan. 29, 1882	11 to 12 p. m.	------	.060		Feb. 5	.460
Jan. 30, 1882	1 to 2 a. m.	------	.058		Feb. 6	.404
Jan. 30, 1882	10 to 11 a. m.	.051	------	Barometer rising rapidly accompanied by snow.	Feb. 7	.425
Feb., 1882	------	------	------	Greatest change —.049 on 15th, 7 to 8 p. m. Temperature rose same hour from —53°.1 to —46°.6.	Feb. 15 Feb. 24	.465 .488
Mar. 30, 1882	1 to 2 a. m.	.075	------	Other hourly changes greater than .05 during day. Barometer rising rapidly after touching 28.988, lowest of the year. Rise followed by wind southeast, 20 miles at 8 p. m. Temperature rose from —34°.4 at 8 a. m. to —8°.6 at 8 p. m.	Mar. 2 Mar. 3 Mar. 21 Mar. 29 Mar. 30	.541 .656 .427 .464 .789
Apr., 1882	------	------	------	Greatest change 23d, +.046. Southwest wind of 22 miles at 3 a. m.; same hour.	Apr. 8 Apr. 10	.616 .417
May, 1882	------	------	------	Greatest change 28th, —.029. Wind, same hour, south, 17 miles. Temperature first reached 32°.0 since 2 p. m., August 26th.	Apr. 21	.468
June, 1882	------	------	------	Greatest change 23d, +.042. Hign temperatures in a. m., followed by rain and falling temperatures p. m.	------	------
July, 1882	------	------	------	Greatest change 29th, +.035. Stationary temperature with occasional snow and rain.	July 29	.480
Aug., 1882	------	------	------	Greatest change 9th, +.031.	------	------
Sept., 1882	------	------	------	Greatest change 29th, —.041.	Sept. 19	.425
Oct., 1882	------	------	------	Greatest change 20th, —.047; 5 to 6 a. m.	------	------
Nov., 1882	------	------	------	Greatest change 15th, —.043.	Dec. 17	.451
Dec., 1882	------	------	------	Greatest change 30th, +.039.	Dec. 20	.446
Jan. 4, 1883	3 to 4 p. m.	------	.063	Barometer fell .480 during day.	Jan. 4	.480
Feb. 3, 1883	11 to 12 p. m.	------	.098	Barometer fell .140 in three hours.	Jan. 22	.464
Feb. 7, 1883	1 to 2 a. m.	.061	------	Barometer rose .295 in ten hours.	Feb. 8	.664
Feb. 8, 1883	3 to 4 a. m.	------	.081	Barometer fell .333 in seven hours and .664 during the day.	Feb. 24	.468
Mar. 6, 1883	8 to 9 a. m.	------	.063	Barometer fluctuating violently; fell .378 in twelve hours and later rose .065 in one hour, from 3 to 4 p. m.	Mar. 2 Mar. 4	.531 .520
Mar. 7, 1883	5 to 6 p. m.	------	.053	Barometer fell .353 during the day.	Mar. 8	.665
Mar. 8 1883	12 to 1 p. m.	.076	------	Strong southerly gale. Barometer rose .509 in twelve hours, changing over .050 several hours.	Mar. 10	.485
Mar. 11, 1883	2 to 3 p. m.	.072	------	Barometer rose .262 in four hours.	Mar. 12	.479
Mar. 14, 1883	7 to 8 p. m.	.051	------	Temperature rose 15°.5 in seven hours.	Mar. 15	.460
Mar. 15, 1883	5 to 6 p. m.	.071	------	Barometer rising and temperature falling rapidly.	Mar. 21	.674
Mar. 21, 1883	3 to 4 p. m.	------	.080	Barometer fell .403 in eight hours, averaging —.051 hourly.	Mar. 22	.588
Mar. 22, 1883	7 to 8 a. m.	.054	------	Heavy snow. Barometer rose .582 during the day.	Mar. 23	.481
Apr., 1883	------	------	------	Greatest change 3d, —.033.	Apr. 22	.433
May, 1883	------	------	------	Greatest change 1st, —.040.	------	------
June, 1883	------	------	------	Greatest change 2d, —.040.	------	------
July, 1883	------	------	------	Greatest change 20th, +.029.	------	------

[a] Aneroid; all others mercurial from December 16th, inclusive.

TEMPERATURE OF THE AIR.

Temperature observations were made every four hours on the outward journey from St. John's, Newfoundland, to Fort Conger, Discovery Bay, from July 7 to August 5, 1881, which are given in detail under miscellaneous observations.

These observations were continued hourly at Fort Conger from August, 1881, until the abandonment of the station, August 9, 1883. During the retreat by boat, and later at Camp Clay, observations were made as often as circumstances would permit, and the last temperature record was made June 20, 1884, forty hours before the relief of the party.

INSTRUMENTS USED.

The thermometers in use, both spirit and mercurial, were made by J. Green, New York, and were tested at the U. S. Signal Office from 32° [0° C.] to 100° [37.8° C.], between which ranges their errors were inconsiderable. Later the error of these thermometers was carefully determined at 32° [0° C.], and at the temperature of freezing pure mercury which was assumed to be −37°.9 [−38°.8 C.]. The instrumental errors between these two points were determined for the several instruments by between one and two thousand comparative readings, and can probably be depended on to ±0°.1 [±0°.06 C.] at any point on the scale.

Below −37°.9 [−38°.8 C.] the value of the errors depends on the readings of spirit thermometer No. 1, J. Green, a fine instrument graduated to below −60° [−51° C.], which showed a remarkably small error between the melting points of fresh water ice and the freezing point of mercury. It was assumed that the error continued in the same ratio, doubtless an untenable assumption, but from which it is probable any resulting error would be less than one degree.

The thermometer was not brought back, having been cracked by Lieutenant Lockwood at his farthest in 83° 24′, May 13–15, 1882.

The hourly temperatures were recorded from mercurial thermometer No. 1031 (hygrometer pattern) from August 5, 1881, to include 11 a. m. September 24, 1881. The correction of −0°.1 F. has been applied to all readings in accordance with error card from Office of the Chief Signal Officer.

Mercurial thermometer No. 772 was used for hourly readings from noon September 4, 1881, to include 4 a. m. January 5, 1883, after which time until August 9, 1883, mercurial thermometer No. 766 was used. Nos. 766 and 772 read together under similar circumstances at all temperatures. From 32° [0° C.] to −37°.9 [−38°.8 C.] their errors remained constant within limits of 0.°1 to 0°.2 [0°.06 to 0°.11 C.] at 0°.6 [0°.3 C.], and consequently the correction of −0°.6 [−0°.3 C.] has been applied to all readings. The mercurial thermometers were read only to −37°.0 [−38°.4 C.].

From December 1, 1881, to August 9, 1883, on all occasions when the temperature was below −37°.0 [−38°.4 C.] the hourly readings were made from spirit thermometer No. 708. This thermometer read 3.6° low from the temperature of freezing mercury to −41° [−40°.6 C.], and from a few comparative readings varied from 3°.7 to 3°.9 low, from −42° [−41°.1 C.] to −55° [−48°.3 C.]. In consequence the correction of +3°.6 [+2°.0 C.] was adopted above −42° [−41°.1 C.], and of +3°.8 [+2°.1 C.] at and below that temperature.

Maximum thermometer No. 629 was used until September 30, 1881, when it was replaced by No. 613, which was used from October 1, 1881, until broken in April, 1883. The correction of each thermometer was ±0°.0 as per error card from Office Chief Signal Officer.

As the temperature for weeks at a time was below the freezing point of mercury, many maximum readings are the highest observed.

Minimum thermometer (spirits of wine), which by official error card needed no correction, was used to include September 15, 1881, when No. 590 (colorless spirits of wine) was substituted, which was ever after read.

The error of No. 590 was determined by hundreds of comparative readings, for every degree between 45° [7°.2 C.] and −56° [−49° C.], as well as by the usual tests at the melting point of fresh ice and the freezing point of mercury.

The corrections adopted for No. 590 are as follows:

°	°	°	°	°	°
40.0 to	43.9	+0.5	−10.5 to	−12.5	+1.6
38.0	39.9	+0.4	−12.6	−14.2	+1.7
36.0	37.9	+0.3	−14.3	−15.8	+1.8
33.0	35.9	+0.2	−15.9	−17.5	+1.9
32.0	32.9	+0.3	−17.6	−19.2	+2.0
29.0	31.9	+0.4	−19.3	−20.8	+2.1
27.0	28.9	+0.5	−20.9	−22.5	+2.2
26.0	26.9	+0.6	−22.6	−24.2	+2.3
24.0	25.9	+0.7	−24.3	−25.8	+2.4
23.0	23.9	+0.8	−25.9	−27.5	+2.5
11.0	22.9	+0.9	−27.6	−29.2	+2.6
9.0	10.9	+1.0	−29.3	−30.8	+2.7
1.1	8.9	+1.1	−30.9	−32.5	+2.8
1.0	− 1.9	+1.2	−32.6	−33.3	+2.9
− 2.0	− 2.9	+1.3	−33.4	−55.5	+3.0
− 3.0	− 3.9	+1.4	−59.6	downward	+2.0
− 4.0	−10.4	+1.5			

The thermometers exposed in an instrument shelter were 34.4 feet [10.5^{m}] above the mean sea level, and were 5 feet [1.5^{m}] above the ground.

The thermometers were fastened to a sheet iron cylinder (bulbs two to three inches from it), which revolved so that the instruments were read in succession, and was brought before the direct influence of the heat from the observer but once. The cylinder was protected by a small shelter of sheet iron of louvre pattern, which in turn was protected by a louvre-shaped wooden shelter 5 feet [1.5^{m}] square and 8 feet [2.4^{m}] high.

The readings credited to the even hour Washington mean time (49 minutes slower than local mean time) were really made about four minutes after the hour.

The maximum and minimum thermometers were read at 12 midnight, and a portion of the time were recorded every four hours, but the latter readings have not been reproduced.

Maxima and minima values are printed in bold-faced type.

Interpolated values are printed in italics.

The temperature observations, in all cases corrected for instrumental errors, are given in the following table:

AUGUST, 1881.

TABLE XLIV.—*Temperature of the air, August*, 1881.

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	----	----	----	----	----	----	----	----	----	----	----	----	----	----
2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
3	----	----	----	----	----	----	----	----	----	----	----	----	----	----
4	----	----	----	----	----	----	----	----	----	----	----	----	----	----
5	33.4	32.9	33.4	33.9	33.9	36.2	37.2	37.9	36.4	36.4	37.7	37.9	37.9	37.9
6	33.9	35.9	35.9	35.9	35.9	36.4	37.1	37.9	37.9	38.6	39.9	42.9	43.4	43.9
7	34.7	34.7	33.9	33.4	35.2	37.6	36.9	35.9	36.9	36.9	37.4	38.4	39.9	40.9
8	30.4	30.4	30.4	30.4	30.4	30.4	31.9	32.4	33.9	33.9	33.9	34.4	34.9	34.9
9	32.4	32.4	32.4	32.4	32.4	32.9	33.2	34.1	34.9	34.7	34.7	34.7	34.4	33.9
10	34.9	35.7	35.7	35.9	36.4	36.9	36.9	36.9	37.4	37.9	37.1	37.4	37.9	37.9
11	36.4	36.9	36.4	35.9	36.4	36.9	35.9	35.9	36.0	35.9	35.9	36.5	38.9	38.7
12	39.8	39.8	40.9	40.9	40.9	40.1	40.7	40.4	39.8	39.9	40.9	39.9	40.7	43.4
13	43.9	42.9	44.2	43.9	42.4	42.4	42.9	42.9	44.4	45.0	43.9	42.9	42.9	42.9
14	43.4	43.4	40.9	40.4	41.4	41.9	42.9	42.9	39.9	41.7	41.7	41.2	41.9	41.9
15	39.9	39.9	38.4	38.9	39.2	39.9	40.4	40.9	38.6	38.4	38.9	39.5	39.6	40.9
16	39.4	39.4	38.0	37.4	37.9	37.9	37.9	38.4	38.7	39.0	39.4	39.7	40.4	40.1
17	36.9	36.9	36.9	36.8	36.8	36.9	36.9	36.9	37.1	37.1	37.2	37.9	37.4	38.9
18	32.9	32.9	32.9	32.4	32.7	32.9	33.7	33.9	34.9	35.7	36.7	36.9	37.4	37.4
19	27.9	27.9	27.9	27.4	27.9	27.9	28.0	27.9	29.8	29.4	30.0	29.8	29.9	28.9
20	23.9	23.9	22.9	23.4	23.4	23.1	24.0	24.9	24.9	25.4	28.0	27.9	28.9	28.9
21	30.4	30.9	31.4	31.9	31.4	31.9	32.0	31.9	32.4	32.9	34.0	34.9	34.9	34.9
22	29.1	29.1	29.9	30.9	32.4	33.7	32.9	33.4	31.9	33.7	33.9	33.4	32.2	32.7
23	30.9	30.5	30.5	30.9	31.5	31.7	31.8	31.9	31.9	32.4	33.4	32.7	32.7	31.9
24	28.1	27.9	28.4	28.6	28.6	28.3	28.0	28.9	28.2	28.2	28.7	28.7	28.9	28.2
25	25.9	25.9	26.1	25.9	26.9	27.4	27.4	27.6	27.9	27.4	27.7	27.9	27.1	27.4
26	25.9	25.4	26.7	27.1	27.4	27.4	27.9	28.9	30.4	34.4	32.9	33.4	35.4	31.9
27	26.4	25.9	24.9	24.9	24.4	24.9	25.0	25.9	25.9	25.9	28.5	28.9	29.9	29.1
28	28.4	27.9	25.0	25.4	23.9	25.7	24.4	21.9	24.9	24.9	26.9	30.4	26.9	25.9
29	24.8	24.9	25.7	28.9	29.9	30.9	28.9	29.4	33.9	31.9	30.9	30.9	32.9	32.9
30	23.4	23.9	23.4	24.8	27.4	29.9	28.9	29.9	29.9	28.4	30.9	31.6	30.5	30.9
31	21.9	23.9	26.4	25.4	25.9	25.4	25.1	25.9	25.9	27.9	27.9	27.9	27.9	27.7
Means	**31.83**	31.93	**31.83**	32.00	32.33	32.87	32.92	33.17	33.51	33.85	34.41	34.76	35.03	34.98
Means in centigrade	**−0.11**	−0.06	**−0.11**	0.00	0.17	0.50	0.50	0.67	0.83	1.00	1.33	1.56	1.67	1.67

AUGUST, 1881.

TABLE XLIV.—*Temperature of the air, August, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2
......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3
......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4
44.9	39.9	36.9	36.9	36.1	34.9	34.9	34.9	33.9	33.9	36.24	44.9[a]	32.9[a]	12.0	2.33	5
44.9	43.9	40.4	37.9	37.4	36.4	35.4	34.9	34.7	34.4	38.16	44.9[a]	33.9[a]	11.0	3.44	6
41.9	38.4	31.5	35.4	35.9	34.9	33.9	32.9	32.1	31.8	35.89	41.9[a]	31.5[a]	10.4	2.17	7
34.2	35.9	35.7	37.9	38.2	37.9	35.4	32.4	31.0	34.4	33.57	38.2[a]	30.4[a]	7.8	0.89	8
33.4	33.4	33.9	34.9	34.9	34.9	34.9	34.9	33.2	34.9	33.87	34.9[a]	32.4[a]	2.5	1.06	9
37.9	37.9	37.9	37.9	37.5	37.4	36.9	36.4	35.9	35.9	36.94	37.9[a]	34.9[a]	3.0	2.72	10
38.9	38.9	38.9	39.1	39.8	39.1	39.1	39.3	39.4	39.3	37.68	39.8[a]	35.9[a]	3.9	3.17	11
44.9	43.7	42.9	43.4	44.9	45.9	44.9	43.4	44.6	44.4	42.13	**45.9**[a]	39.8[a]	6.1	5.61	12
42.7	42.0	42.7	41.9	43.7	43.2	42.4	42.4	44.9	43.9	**43.22**	45.0[a]	41.9[a]	3.1	**6.22**	13
41.7	44.9	44.4	44.4	44.4	44.4	42.7	41.9	40.9	40.2	42.31	44.9[a]	39.9[a]	5.0	5.72	14
40.9	42.9	43.9	42.9	41.9	40.9	40.9	40.2	40.0	41.1	40.38	43.9[a]	38.4[a]	5.5	4.67	15
41.4	40.9	41.4	40.4	40.0	38.9	38.6	38.4	37.9	36.9	39.10	41.4[a]	36.9[a]	4.5	3.94	16
39.9	39.4	38.9	37.9	36.9	36.4	35.4	34.4	33.9	33.9	36.98	39.9[a]	33.9[a]	6.0	2.78	17
36.9	38.9	39.9	38.7	35.9	34.7	33.9	32.4	31.9	31.4	34.91	39.9[a]	31.4[a]	8.5	1.61	18
29.4	28.4	28.4	27.4	27.2	26.4	25.9	25.9	25.0	24.9	27.90	30.0[a]	23.6	6.4	−2.28	19
29.9	29.2	30.2	29.9	30.4	30.9	30.7	29.9	30.1	29.9	27.28	30.9[a]	22.9	8.0	−2.61	20
34.9	34.5	35.9	35.9	35.9	32.9	30.4	29.9	31.4	29.1	32.78	35.9[a]	28.1	7.8	0.44	21
32.4	31.9	31.9	30.9	30.9	30.9	30.9	31.9	30.5	30.4	31.74	33.9[a]	28.1	5.8	−0.17	22
31.9	31.9	31.7	30.7	30.4	29.8	28.9	28.8	28.9	28.7	31.10	35.0	28.1	6.9	−0.50	23
28.0	27.9	27.2	26.9	26.7	26.6	26.1	26.1	26.0	25.9	27.71	31.0	24.1	6.9	−2.39	24
27.9	27.4	27.9	27.7	26.9	26.8	26.9	26.9	26.9	26.7	27.10	29.2	24.1	5.1	−2.72	25
29.9	29.4	28.9	27.9	26.9	26.9	26.9	26.9	27.9	27.9	28.94	36.0	24.1	11.9	−1.72	26
29.0	28.9	29.4	29.4	29.0	28.4	28.4	28.4	28.5	28.4	27.43	30.9	23.6	7.3	−2.56	27
25.9	24.9	24.4	24.4	26.4	25.7	25.2	26.2	24.9	25.4	25.66	30.5	19.6	10.9	−3.50	28
29.9	30.4	25.9	28.7	27.9	26.9	25.4	24.9	25.4	23.9	28.59	36.0	21.6	14.4	−1.89	29
29.4	28.4	26.9	25.4	25.4	24.7	23.9	23.0	25.9	24.3	27.13	33.0	21.1	11.9	−2.72	30
26.4	26.4	24.9	24.4	21.9	19.9	19.9	19.1	19.7	19.1	**24.45**	29.0	15.6	13.4	−**4.22**	31
35.16	34.84	34.18	34.04	33.83	33.21	32.55	32.10	32.05	31.89	33.30	37.21	29 58	7.63	......	
1.78	1.56	1.22	1.11	1.00	0.67	0.28	0.06	0.00	−0.06	0.72	2.90	−1.35	4.25	0.72	

[a] From the observed hourly readings

SEPTEMBER, 1881.

TABLE XLV.—*Temperature of the air, September*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\varphi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 m.
1	18.9	16.2	14.9	18.9	21.9	16.9	24.9	22.9	25.9	26.4	24.4	27.4	27.4	25.4
2	21.9	20.9	21.4	20.9	20.9	21.9	21.9	24.4	26.7	23.9	26.0	23.9	23.9	24.1
3	17.9	16.9	15.9	17.9	18.9	20.7	22.9	24.4	24.9	26.9	25.9	25.9	24.9	24.7
4	18.9	17.9	13.9	19.4	23.9	25.9	22.9	19.9	19.8	21.9	26.0	28.9	23.9	26.7
5	20.9	19.9	18.8	18.9	17.4	18.1	14.9	20.9	20.9	20.9	21.4	20.9	20.4	20.4
6	12.9	16.4	16.4	17.4	17.4	17.4	17.5	17.7	18.9	17.9	20.4	19.9	18.9	16.9
7	18.9	18.9	21.4	23.9	23.5	24.4	24.9	23.8	21.7	21.9	24.8	21.8	23.6	26.6
8	19.4	18.9	18.6	18.2	17.9	17.9	19.5	18.3	21.8	17.9	23.1	23.5	17.7	17.4
9	17.1	16.9	16.9	17.4	16.9	17.4	18.9	18.1	20.5	23.4	23.3	17.9	19.9	21.4
10	8.9	7.9	7.9	19.4	22.1	24.5	24.8	24.4	21.9	23.4	21.9	21.9	19.9	17.9
11	12.9	12.9	12.4	10.9	11.9	12.9	12.9	13.7	18.9	21.9	21.9	14.9	13.9	14.9
12	17.5	18.4	17.9	18.7	18.5	18.9	19.4	18.9	19.4	19.9	20.4	20.9	19.9	20.9
13	14.9	15.7	14.9	14.6	13.9	11.9	14.1	11.4	15.9	15.4	13.9	16.4	15.4	15.4
14	12.1	10.7	10.4	10.4	10.4	8.4	14.9	15.4	16.4	17.1	17.1	17.9	19.9	18.9
15	15.9	14.4	14.3	13.9	12.9	11.4	12.8	11.7	13.4	14.7	16.1	15.9	16.4	16.9
16	10.7	11.9	8.9	8.4	8.4	9.4	9.9	9.9	11.9	19.7	23.9	23.9	20.9	17.9
17	14.4	13.9	13.9	13.4	13.9	13.9	13.9	13.9	14.2	13.9	13.9	13.7	13.7	12.9
18	12.9	12.4	13.2	12.5	11.9	13.4	13.4	13.2	13.4	13.9	13.9	14.4	14.7	13.9
19	12.4	12.9	13.2	12.9	11.4	10.9	9.9	9.7	9.7	9.7	9.2	9.7	7.1	7.7
20	8.9	9.9	9.9	8.9	8.2	6.0	7.7	6.4	2.9	3.7	12.9	12.9	5.4	1.4
21	− 7.9	− 5.7	− 7.6	− 6.4	− 6.6	− 6.1	− 7.1	− 7.1	− 7.1	− 2.1	1.4	1.4	2.9	1.4
22	− 2.1	− 2.6	− 2.6	− 2.9	− 3.4	− 5.6	− 6.1	− 3.1	− 5.1	− 3.1	− 1.1	− 1.6	2.4	− 0.1
23	− 1.1	− 2.6	− 3.6	− 4.1	− 2.1	− 2.1	− 0.1	− 0.1	− 1.1	3.7	2.8	2.0	2.0	2.4
24	− 0.1	1.9	2.0	1.9	1.9	− 0.6	0.9	− 1.2	1.9	3.4	5.2	6.4	5.6	4.7
25	− 2.2	− 4.1	− 3.1	− 2.6	− 2.1	− 3.6	− 5.1	− 5.1	− 4.1	− 2.3	− 2.5	− 2.1	− 0.6	− 2.8
26	− 3.1	− 2.6	− 3.1	− 4.1	− 3.6	− 5.6	− 8.1	− 8.1	− 6.6	− 6.5	− 4.6	− 4.6	− 4.6	− 3.8
27	− 0.6	0.4	0.9	1.4	1.4	1.9	2.4	3.2	3.4	3.9	4.2	4.4	4.9	4.9
28	7.4	4.4	5.4	3.4	2.4	2.4	1.9	2.8	0.8	2.5	4.9	2.9	1.7	1.4
29	6.4	6.4	7.1	7.4	6.4	3.4	2.4	1.4	− 0.6	− 0.6	− 2.1	− 4.1	− 2.6	− 3.8
30	− 6.4	− 9.6	− 8.0	− 3.6	− 1.6	− 1.1	0.1	0.9	1.4	2.4	3.4	3.4	3.9	3.9
Means ..	9.953	9.660	**9.417**	10.243	10.497	10.173	10.773	10.753	11.400	12.523	**13.733**	13.357	12.780	12.283
Means in centigrade ..	−12.22	−12.39	**−12.56**	−12.11	−11.94	−12.11	−11.78	−11.78	−11.44	−10.83	**−10.17**	−10.33	−10.67	−10.94

SEPTEMBER, 1881.

TABLE XLV.—*Temperature of the air, September, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
26.4	25.4	25.4	25.9	23.9	22.4	23.4	21.9	21.9	21.9	22.954	28.0	14.9[a]	13.1	— 5.00	1
24.5	24.9	24.9	24.5	21.9	19.7	18.9	19.3	18.4	18.9	22.438	26.8	18.4[a]	8.4	— 5.33	2
26.9	25.9	24.9	21.9	20.9	19.9	20.4	19.9	19.9	19.9	22.050	29.0	14.4	14.6	— 5.56	3
27.0	26.9	23.9	20.9	18.0	18.9	20.9	21.1	22.0	20.9	22.100	30.0	10.1	19.9	— 5.50	4
20.4	20.4	19.9	19.9	19.6	19.4	18.9	18.9	18.8	17.9	19.533	24.5	13.6	10.9	— 6.94	5
18.9	18.1	17.9	17.7	16.0	13.5	12.9	15.9	17.8	17.9	17.192	22.0	12.1	9.9	— 8.22	6
22.4	25.9	22.4	22.4	20.9	20.9	20.9	20.9	20.0	19.4	22.342	26.6[a]	18.1	8.5	— 5.39	7
18.0	17.8	17.7	16.9	16.9	16.9	16.9	16.9	16.7	17.9	18.446	27.0	16.6	10.4	— 7.56	8
14.4	13.7	14.4	12.4	12.9	12.4	12.9	10.8	9.9	9.4	16.217	26.0	9.1	16.9	— 8.78	9
17.3	14.9	14.9	16.2	14.9	13.4	14.4	14.9	11.9	12.9	17.188	24.8[a]	7.9[a]	16.9	— 8.22	10
14.9	15.9	16.4	16.7	13.5	15.4	15.9	16.9	17.9	17.4	15.325	22.0	8.9	13.1	— 9.28	11
21.9	21.9	19.9	18.9	18.4	18.4	17.9	17.1	16.2	14.7	18.954	23.0	13.6	9.4	— 7.28	12
14.4	14.4	14.4	13.6	12.9	10.9	12.9	11.9	10.9	11.9	13.833	17.0	9.1	7.9	— 10.11	13
21.1	19.4	18.1	16.9	16.0	14.9	15.4	14.7	13.4	12.9	15.117	25.0	8.1	16.9	— 9.39	14
16.4	16.9	13.5	13.9	13.1	13.9	12.4	12.4	11.9	11.9	14.042	17.0	11.1	5.9	— 10.00	15
15.9	13.7	13.7	13.1	11.9	10.9	11.9	13.4	13.5	13.8	13.646	24.0	8.4[a]	15.6	— 10.22	16
12.9	12.9	12.4	12.4	12.1	11.9	12.4	12.4	12.4	11.9	13.217	15.0	11.0	4.0	— 10.44	17
13.9	13.9	13.9	13.4	12.9	13.4	13.7	13.4	13.9	13.9	13.475	15.0	11.0	4.0	— 10.28	18
5.9	4.5	4.6	5.9	5.9	5.9	7.9	7.9	7.9	9.0	8.825	15.0	1.2	13.8	— 12.89	19
— 0.1	2.4	1.9	— 3.1	— 4.1	— 2.6	— 3.1	— 4.1	— 2.6	— 4.2	3.562	12.9[a]	— 5.5	18.4	— 15.78	20
— 1.1	— 4.1	— 2.1	— 4.6	— 0.6	— 4.1	— 2.6	— 4.6	— 4.1	— 1.1	— 3.567	5.0	— 9.5	14.5	— 19.78	21
— 0.1	— 0.1	— 1.1	— 4.1	— 3.6	— 3.3	— 1.9	— 1.6	— 4.7	— 3.6	— 2.546	7.0	— 6.5	13.5	— 19.17	22
5.1	7.6	6.5	7.9	7.4	6.9	4.9	4.9	3.9	3.1	2.258	10.0	— 7.0	17.0	— 16.56	23
3.4	2.3	— 0.2	0.4	— 0.1	0.4	— 0.1	— 2.6	— 1.6	— 4.1	1.321	11.0	— 4.1	15.1	— 17.06	24
— 3.1	— 3.4	— 2.7	— 3.4	— 2.6	— 5.1	— 5.1	— 3.8	— 4.6	— 3.1	— 3.258	5.0	— 6.5	11.5	— 19.56	25
— 5.8	— 5.7	— 5.8	— 5.4	— 3.6	— 2.6	— 2.6	— 3.1	— 2.6	— 3.5	— 4.656	0.0	— 9.5	9.5	— 20.33	26
4.9	4.4	4.5	4.4	4.5	4.4	4.9	4.9	4.9	7.4	3.579	8.0	— 0.7	8.7	— 15.78	27
2.9	2.9	3.9	3.6	3.4	4.4	5.4	5.9	6.4	6.4	3.729	8.5	0.2	8.3	— 15.72	28
— 7.1	— 4.6	— 2.6	— 6.9	— 4.6	— 5.6	— 5.1	— 6.3	— 5.6	— 7.8	— 1.212	10.0	— 9.5	19.5	— 18.44	29
3.9	3.9	3.9	4.4	4.4	4.4	4.4	4.4	4.6	4.9	1.346	5.0	—10.4	15.4	— 17.06	30
11.880	11.800	11.313	10.557	10.103	9.673	10.000	9.820	9.643	9.630	10.915	17.34	4.95	12.38	....	
—11.17	—11.22	—11.50	—11.89	—12.17	—12.39	—12.22	—12.33	—12.44	—12.44	—11.72	—8.14	— 15.04	7.87	— 11.72	

[a] From the observed hourly readings.

OCTOBER, 1881.

Table XLVI.—*Temperature of the air, October*, 1881.

Washington mean time. Reduced to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	5.4	5.4	5.4	4.9	4.4	4.6	4.4	4.4	4.9	4.9	4.9	4.9	4.9	4.4
2	5.5	5.0	4.9	5.4	5.4	5.9	6.2	6.4	6.4	5.7	6.4	7.4	7.4	6.9
3	8.6	9.0	7.6	6.8	2.4	2.7	1.3	0.9	- 0.4	- 0.9	- 1.6	- 1.6	- 1.6	- 3.1
4	-11.1	-10.8	- 8.7	-11.1	-11.6	-11.4	- 9.6	-13.4	-11.9	-12.6	- 6.1	-10.3	-10.9	-11.8
5	-13.8	-13.8	-15.4	-12.6	-12.6	-11.1	-11.6	-12.2	-11.8	- 9.6	-10.2	- 9.9	- 9.1	- 9.2
6	- 3.4	- 3.4	- 6.1	- 7.4	- 9.1	- 8.6	- 8.6	-10.6	- 8.4	- 8.4	-10.3	-10.9	-12.6	- 8.6
7	- 2.3	- 0.8	- 0.6	0.2	0.6	1.4	1.4	0.6	0.3	0.6	0.2	0.2	0.5	1.4
8	3.4	2.9	3.4	3.4	2.4	1.9	1.9	2.0	2.1	1.4	1.4	1.4	1.6	1.4
9	- 5.6	- 6.8	- 6.1	- 6.8	- 7.6	- 6.3	-13.6	-12.1	-11.1	- 9.1	- 7.4	- 6.4	- 3.6	- 2.2
10	- 5.6	- 5.7	- 5.9	- 4.6	- 3.8	- 2.6	- 2.6	- 3.1	- 3.6	- 4.1	- 6.4	- 5.1	- 5.6	- 5.1
11	- 8.1	- 8.6	- 8.6	- 8.1	- 7.6	- 7.6	- 6.1	- 6.6	- 7.1	- 7.6	- 8.4	-10.6	-12.8	- 8.6
12	-11.6	-12.6	-14.4	-13.6	-14.1	-13.6	-14.1	-14.2	-12.6	-12.6	-13.6	-14.9	-15.6	-17.0
13	-17.1	-17.6	-21.1	-18.6	-19.6	-16.8	-18.6	-19.5	-21.6	-20.6	-20.2	-20.6	-21.6	-21.8
14	-18.6	-13.6	-18.6	-17.6	-15.1	-14.1	-17.6	-15.6	-18.6	-19.1	-20.2	-21.1	-19.8	-19.1
15	-13.4	-12.6	-13.6	-14.4	-15.6	-17.2	-17.6	-18.6	-22.6	-14.1	-17.8	-15.0	-13.1	-14.6
16	-25.1	-23.6	-23.6	-24.6	-24.6	-25.6	-25.4	-25.1	-27.0	-26.1	-25.9	-25.9	-28.4	-27.1
17	-17.9	-17.6	-17.6	-17.3	-18.5	-17.2	-15.6	-14.6	-13.8	-14.1	-14.6	-15.5	-15.6	-17.6
18	-25.6	-24.6	-24.6	-25.6	-23.9	-27.8	-25.6	-26.7	-31.1	-24.1	-26.8	-25.6	-27.8	-26.7
19	-25.1	-22.6	-23.6	-21.0	-18.2	-20.3	-17.6	-22.3	-22.1	-21.6	-17.6	-21.2	-21.6	-19.6
20	-16.4	-18.8	-15.6	-18.8	-16.6	-18.1	-14.6	-17.1	-15.4	-12.5	- 9.8	- 8.6	-10.6	-10.6
21	- 4.4	- 3.6	- 3.6	- 4.1	- 5.2	- 6.8	- 4.4	- 6.6	- 9.1	- 6.6	- 8.9	- 8.4	-10.6	- 9.6
22	0.6	2.9	- 2.4	- 3.6	- 7.6	- 9.6	-11.1	- 9.6	-11.6	-12.6	-10.8	-13.6	-11.6	-15.1
23	-15.4	-15.6	-14.6	-13.6	-16.4	-13.6	-14.1	-14.9	-11.6	-13.6	- 8.6	-12.8	-12.6	-13.6
24	-10.1	-13.6	- 9.6	- 7.6	- 6.8	- 7.6	- 5.6	- 9.6	- 8.6	- 6.1	- 8.6	- 6.2	- 5.8	- 6.1
25	- 4.8	- 4.6	- 3.6	- 5.6	- 6.6	- 4.1	- 3.6	- 3.1	- 6.6	- 5.1	- 8.6	- 6.0	- 5.6	- 1.1
26	- 0.6	3.4	4.9	2.4	4.4	0.4	2.2	- 0.1	- 5.1	- 4.4	- 3.7	- 4.6	- 6.8	- 8.4
27	- 6.1	- 5.3	- 7.6	- 6.9	- 7.4	- 4.6	- 1.6	- 5.4	- 5.6	- 5.6	- 8.6	- 8.8	- 8.8	- 4.6
28	- 2.1	- 5.6	- 4.1	- 0.6	- 0.6	1.4	0.4	- 4.6	- 2.9	- 2.6	- 2.9	- 2.9	- 8.4	- 5.3
29	- 2.9	- 5.3	- 6.6	- 5.5	- 3.6	- 7.6	- 6.4	- 5.4	- 8.8	- 8.6	- 6.6	- 9.1	- 8.8	-10.6
30	- 6.6	- 8.6	- 5.6	- 9.6	- 9.6	- 9.6	- 6.6	- 6.6	- 7.3	- 5.5	- 5.6	- 7.6	- 6.8	- 7.1
31	- 3.1	- 2.1	- 4.6	- 5.4	- 6.6	0.4	- 5.6	- 4.8	- 6.1	- 4.6	- 8.6	- 6.1	- 7.1	- 9.6
Means	- 8.171	- 8.039	- 8.387	- 8.435	- 8.687	- 8.487	- 8.387	- 9.294	- 9.958	- 9.026	- 9.210	- 9.529	- 9.961	- 9.669
Means in centigrade	-22.33	-22.22	-22.44	-22.44	-22.61	-22.50	-22.44	-22.94	-23.33	-22.78	-22.89	-23.06	-23.33	-23.17

OCTOBER, 1881.

TABLE XLVI.—*Temperature of the air, October, 1881.*

Washington mean time. Reduce to local mean time by adding 49m

Thermometer above the ground, 5 feet = [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
4.3	3.1	3.4	4.4	4.4	4.2	4.2	4.5	4.4	4.6	4.554	6.0	3.1	2.9	-15.28	1
6.4	6.4	6.9	7.2	7.4	8.1	8.3	7.5	6.4	7.3	**6.533**	8.3[a]	4.1	4.2	-**14.17**	2
-7.6	-7.6	-5.3	-10.8	-9.7	-10.5	-10.6	-10.8	-13.3	-12.0	-2.838	**9.0**	-13.3	22.3	-19.33	3
-13.1	-12.9	-12.1	-11.0	-14.2	-14.1	-14.1	-15.8	-12.6	-14.4	-11.900	-5.0	-16.0	11.0	-24.39	4
-8.8	-7.0	-7.9	-7.1	-10.9	-9.7	-7.4	-5.6	-4.6	-3.6	-9.812	-2.5	-16.0	13.5	-23.22	5
-11.8	-12.8	-8.6	-11.7	-9.7	-9.6	-9.6	-6.1	-4.8	-3.6	-8.529	1.0	-14.2	15.2	-22.50	6
5.5	6.4	6.2	5.6	5.4	4.1	3.6	3.3	2.4	2.4	2.025	7.0	-2.5	9.5	-16.67	7
0.4	-0.1	0.2	-3.6	-3.4	-4.1	-6.4	-6.9	-6.6	-6.1	-0.250	6.8	-6.9	13.7	-17.89	8
-4.4	-4.1	-4.4	-4.2	-3.4	-5.0	-4.1	-5.5	-5.1	-4.8	-6.238	0.1	-14.1	14.2	-21.22	9
-5.6	-9.6	-9.6	-6.9	-8.6	-9.1	-9.1	-9.4	-10.6	-8.6	-6.288	0.0	-10.6[a]	10.6	-21.28	10
-9.7	-11.1	-10.9	-11.4	-10.7	-13.1	-8.6	-8.6	-12.6	-12.9	-9.417	-4.8	-13.2	8.4	-23.00	11
-14.6	-15.1	-16.2	-16.9	-16.4	-14.6	-15.8	-16.9	-16.4	-23.6	-15.042	-6.5	-23.6	17.1	-26.11	12
-22.0	-19.6	-16.6	-19.8	-17.6	-16.6	-19.6	-18.6	-13.6	-19.6	-19.121	-12.0	-25.0	13.0	-28.39	13
-21.1	-21.9	-17.1	-19.1	-18.8	-19.0	-18.1	-15.6	-14.3	-13.6	-17.804	-10.0	-25.0	15.0	-27.67	14
-15.6	-16.6	-17.6	-17.9	-17.6	-18.6	-19.5	-22.6	-20.6	-20.6	-16.975	-12.0	-24.5	12.5	-27.22	15
-26.6	-26.4	-25.6	-24.4	-20.9	-20.9	-21.6	-20.1	-18.6	-17.8	-24.204	-17.8[a]	-29.7	11.9	-31.22	16
-21.6	-22.1	-21.7	-23.6	-23.3	-19.6	-22.6	-25.6	-23.3	-22.1	-18.875	-13.0	-26.3	13.3	-28.28	17
-29.6	-26.6	-25.4	-27.6	-27.1	-27.8	-25.4	-25.6	-25.6	-22.6	-**26.242**	-21.5[a]	-**31.1**	9.6	-**32.33**	18
-19.1	-21.6	-19.8	-20.0	-17.6	-20.6	-18.9	-21.1	-19.6	-18.1	-20.408	-16.0	-26.3	10.3	-29.11	19
-9.4	-9.1	-8.6	-8.6	-6.4	-6.8	-6.1	-5.6	-6.6	-5.1	-11.492	-4.0	-20.7	16.7	-24.17	20
-10.6	-10.8	-9.6	-5.6	-6.6	-4.4	-3.6	-1.7	-1.6	2.4	-6.000	4.0	-13.2	17.2	-21.11	21
-9.6	-12.8	-12.6	-10.6	-16.1	-14.6	-15.4	-18.9	-15.4	-17.1	-10.783	7.0	-19.9	26.9	-23.78	22
-14.1	-11.8	-13.6	-11.4	-14.1	-12.6	-10.2	-10.8	-12.1	-12.4	-13.088	-8.6[a]	-17.9	9.3	-25.06	23
-10.6	-7.8	-12.6	-5.1	-5.6	-5.1	-6.6	-5.3	-3.6	-5.6	-7.492	-2.0	-14.2	12.2	-21.94	24
-1.6	-2.6	-3.6	-6.6	1.6	-0.6	-1.6	-1.8	-2.8	-1.6	-3.758	7.0	-8.6[a]	15.6	-19.89	25
-7.8	-6.6	-3.6	-4.4	-0.9	0.4	-2.6	-8.1	-5.6	-6.1	-2.554	8.0	-8.5	16.5	-19.22	26
-6.6	-8.8	-5.9	-6.6	-6.4	-5.1	-7.9	-6.6	-0.6	-6.6	-6.167	2.0	-10.4	12.4	-21.22	27
-3.6	-2.1	-4.1	-1.6	-2.1	-2.6	-4.1	-6.1	-8.6	-2.6	-3.262	4.0	-8.6[a]	12.6	-19.61	28
-8.1	-8.6	-10.1	-7.0	-9.1	-10.1	-7.6	-7.6	-7.6	-6.9	-7.438	5.8	-12.2	18.0	-21.89	29
-5.6	-4.6	-1.6	0.4	-5.6	-1.8	-0.6	-5.6	-2.6	-1.6	-5.496	3.0	-10.4	13.4	-20.83	30
-7.6	-10.6	-11.6	-9.4	-9.6	-13.6	-11.6	-12.1	-10.6	-10.4	-7.542	4.5	-14.2	18.7	-21.94	31
9.994	-**10.174**	-9.665	-9.526	-9.471	-9.465	-9.458	-9.958	-9.248	-9.139	-9.2223	-1.68	-15.16	13.47	....	
-23.33	-**23.44**	-23.17	-23.06	-23.06	-23.06	-23.06	-23.33	-22.89	-22.83	-22.90	-18.72	-26.22	7.50	-22.90	

[a] From the observed hourly readings.

NOVEMBER, 1881.

TABLE XLVII.—*Temperature of the air, November, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	− 7.4	− 7.6	− 8.1	− 8.6	− 8.6	− 6.9	− 9.9	− 9.6	− 8.6	− 7.0	− 6.1	− 5.1	− 4.6	− 5.6
2	− 7.6	− 8.6	− 9.4	− 9.6	− 9.1	− 8.4	− 7.6	− 7.1	− 6.9	− 6.6	− 5.6	− 4.8	− 4.6	− 4.4
3	− 6.8	− 6.6	− 7.1	− 7.4	− 7.8	− 9.6	−10.6	−14.6	−15.6	−10.6	−18.6	−16.6	−14.6	−15.6
4	− 7.6	− 8.1	− 9.3	−10.2	−12.6	−12.5	−10.6	−13.8	−14.6	−12.9	−13.6	−13.6	−13.1	−13.6
5	−18.1	−18.6	−18.6	−19.1	−20.4	−23.6	−23.6	−21.6	−21.5	−20.1	−18.1	−17.8	−16.4	−16.6
6	−14.1	−11.6	−11.8	−11.6	− 8.4	− 9.1	− 7.1	− 8.2	− 7.6	− 7.8	− 7.8	− 6.8	− 6.6	− 7.1
7	−11.8	−11.8	−12.6	−13.7	−14.7	−15.8	−14.6	−11.5	−13.1	−12.9	−12.6	−12.1	−12.2	−11.8
8	−10.4	− 9.8	− 8.6	− 9.4	−10.3	−10.4	−10.3	− 9.1	−10.4	−10.6	−10.6	−11.1	−12.6	−12.5
9	−14.6	−15.4	−16.1	−17.0	−18.1	−19.2	−18.6	−20.1	−19.6	−20.6	−21.6	−22.4	−21.8	−23.1
10	−29.1	−30.1	−31.1	−31.1	−32.1	−30.2	−29.1	−30.6	−30.6	−32.6	−32.1	−31.6	−34.1	−33.6
11	−32.8	−33.6	−33.4	−33.1	−33.1	−32.6	−35.4	−35.8	−35.2	−32.6	−34.6	−32.4	−32.8	−30.5
12	−27.1	−29.1	−28.1	−27.1	−27.8	−32.1	−34.6	−34.6	−35.5	−36.2	−35.7	−32.6	−34.9	−32.9
13	−25.8	−25.6	−25.6	−26.2	−25.9	−27.1	−27.3	−26.6	−33.8	−29.6	−31.6	−30.4	−31.6	−30.4
14	−29.6	−31.6	−33.1	−33.6	−32.6	−33.6	−36.1	−35.6	−34.2	−34.2	−34.6	−35.1	−36.1	−35.8
15	−34.8	−32.9	−28.6	−28.6	−28.6	−27.4	−29.6	−26.6	−25.6	−24.6	−25.6	−26.1	−27.1	−27.1
16	−20.4	−19.5	−21.6	−21.8	−22.4	−20.6	−18.6	−17.6	−14.6	−13.1	−12.8	−13.6	−14.1	−15.1
17	−24.4	−25.6	−27.9	−30.6	−30.4	−29.6	−32.4	−33.2	−30.6	−30.6	−30.6	−28.6	−30.6	−28.4
18	−25.6	−26.1	−26.1	−25.5	−28.1	−25.6	−28.1	−28.6	−26.6	−27.1	−26.6	−27.5	−26.6	−25.4
19	−23.6	−24.6	−23.7	−22.1	−20.4	−20.4	−20.2	−22.3	−23.6	−27.6	−25.1	−24.6	−23.6	−23.6
20	−16.1	−24.6	−22.1	−23.4	−23.6	−19.1	−21.6	−21.6	−22.6	−24.6	−25.1	−18.1	−20.7	−20.1
21	−16.6	−12.6	−18.6	−20.6	−23.6	−21.1	−21.4	−24.6	−27.1	−26.1	28.6	−27.1	−31.6	−26.1
22	−25.6	−27.6	−30.6	−32.1	−23.6	−30.6	−28.6	−24.6	−29.9	−28.6	−29.6	−30.8	−26.6	−32.8
23	−34.6	−37.9	−33.4	−30.6	−32.7	−34.1	−33.6	−30.6	−32.4	−32.1	−32.9	−33.8	−35.3	−34.6
24	−32.7	−32.5	−33.5	−32.0	−34.5	−31.9	−29.6	−30.6	−29.8	−31.6	−33.1	−31.6	−31.9	−31.1
25	−27.6	−28.4	−28.6	−28.8	−27.6	−26.6	−27.6	−27.6	−31.1	−27.9	−27.6	−30.6	−29.3	−33.1
26	−32.9	−32.4	−32.2	−34.4	−34.7	−34.6	−35.4	−34.6	−32.7	−31.6	−29.1	−35.2	−33.1	−32.1
27	−31.1	−28.6	−29.6	−31.6	−33.1	−30.6	−32.6	−33.6	−33.6	−36.1	−35.6	−33.6	−35.6	−35.9
28	−36.6	−35.1	−36.0	−36.[illegible]	−36.7	−35.2	−38.2[a]	−38.5[a]	−33.6	−35.4	−34.6	−33.3	−36.3	−34.6
29	−37.9	−34.6	−35.6	−34.[illegible]	−35.1	−36.4	−34.6	−34.6	−36.2	−36.6	−36.1	−35.6	−35.6	−36.4
30	−35.9	−37.4	−36.8	−36.8	−36.9	−38.1[a]	−40.6[a]	−37.6	−39.6[a]	−37.6	−40.8[a]	−39.6[a]	−35.0[a]	−39.6[a]
Means	**−23.307**	−23.617	−23.927	−24.257	−24.450	−24.433	−24.937	−24.853	−25.227	−24.850	−25.233	−24.737	−24.967	−24.98[illegible]
Means in centigrade	**−30.72**	−30.89	−31.06	−31.28	−31.33	−31.33	−31.61	−31.61	−31.78	−31.56	−31.78	−31.50	−31.67	−31.67

[a] From spirit (alcohol) thermometer. All readings above −37°.9 from mercurial unless marked [a]. All readings from −37°.9 downward and those marked [a] are from alcohol.

NOVEMBER, 1881.

TABLE XLVII.—*Temperature of the air, November, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
− 7.6	− 7.8	− 7.8	− 7.8	− 7.6	− 7.4	− 7.6	− 6.9	− 6.6	− 7.1	− 7.412	− 4.0	−10.4	6.4	−21.89	1
− 4.6	− 5.3	− 5.5	− 6.8	− 7.8	− 7.6	−10.1	− 5.6	− 7.4	− 7.1	**− 7.004**	**− 3.0**	−10.4	7.4	**−21.67**	2
−15.1	−12.6	−14.2	−13.6	−11.6	−11.1	−10.4	−10.4	−10.6	− 9.4	−11.712	− 3.5	−18.6	15.1	−24.28	3
−14.9	−20.6	−18.4	−14.9	−13.0	−15.6	−12.9	−14.1	−14.6	−15.9	−13.375	− 5.0	−20.7	15.7	−25.22	4
−14.6	−14.6	−12.6	−14.9	−14.9	−15.6	−15.5	−13.4	−13.6	−12.6	−17.338	− 8.0	−23.6	15.6	−27.39	5
− 6.6	− 6.6	−10.1	−10.1	− 7.6	− 7.6	− 8.6	−10.6	−10.7	−10.6	− 8.946	− 9.2	−14.1[a]	4.9	−22.72	6
−11.4	−10.6	−10.4	− 9.7	− 9.6	− 9.6	− 9.6	− 9.7	− 9.8	−10.1	−11.738	− 9.0	−16.0	7.0	−24.28	7
−11.8	−11.8	−11.8	−11.8	−11.6	−13.0	−14.1	−14.4	−14.6	−14.6	−11.483	− 8.0	−15.1	7.1	−24.17	8
−23.1	−23.6	−25.9	−27.6	−27.6	−29.8	−28.6	−33.4	−30.4	−28.6	−22.783	−14.6[a]	−35.0	20.4	−30.44	9
−33.6	−32.6	−34.1	−32.1	−31.6	−32.1	−32.6	−32.6	−33.4	−34.6	−31.971	−28.0	−38.0	10.0	−35.56	10
−32.9	−31.6	−25.9	−26.4	−26.6	−26.1	−23.8	−24.8	−25.6	−26.6	−30.758	−23.0	−39.0	16.0	−34.89	11
−33.6	−32.6	−32.1	−30.4	−27.4	−28.6	−27.6	−26.0	−25.6	−24.1	−30.679	−24.0	−38.0	14.0	−34.83	12
−34.6	−26.8	−37.8	−34.0	−30.6	−28.1	−29.4	−28.6	−30.4	−29.6	−29.475	−18.0	−40.0	22.0	−34.17	13
−34.8	−34.6	−37.6	−38.1	−33.6	−35.6	−35.6	−34.8	−34.8	−34.6	−34.579	−25.0	−40.0	15.0	−37.00	14
−28.1	−24.6	−24.1	−23.1	−22.4	−21.6	−20.7	−20.7	−20.8	−20.4	−25.821	−20.0	−38.0	18.0	−32.11	15
−15.1	−15.6	−15.5	−16.1	−17.0	−17.1	−17.1	−19.6	−20.1	−22.6	−17.567	−11.5	−34.8	23.3	−27.56	16
−31.0	−29.6	−31.2	−31.6	−28.1	−30.8	−29.1	−27.6	−25.6	−25.9	−29.333	−23.0	−36.0	13.0	−34.06	17
−27.1	−28.1	−27.6	−24.8	−25.6	−25.8	−25.6	−25.1	−24.6	−23.6	−26.308	−15.0	−28.6[a]	13.6	−32.39	18
−17.4	−20.6	−16.6	−12.6	−13.6	−14.2	−15.4	−17.9	−15.6	−20.1	−20.392	−12.0	−31.1	19.1	−29.11	19
−18.4	−18.6	−20.8	−20.6	−17.4	−16.6	−17.1	−16.1	−15.6	−17.6	−20.088	−14.0	−28.3	14.3	−28.94	20
−30.8	−29.8	−33.1	−32.7	−30.6	−26.6	−30.6	−27.6	−28.2	−25.6	−25.888	−15.0	−35.0	20.0	−32.17	21
−35.6	−36.8	−34.2	−37.6	−35.1	−35.6	−33.6	−34.1	−34.6	−34.6	−31.392	−22.0	−41.0	19.0	−35.22	22
−30.6	−31.6	−33.4	−30.6	−34.6	−32.5	−34.6	−35.4	−35.8	−32.1	−33.325	−28.0	−42.0	14.0	−36.28	23
−32.6	−28.6	−30.6	−31.1	−27.7	−29.6	−27.9	−30.8	−27.1	−28.6	−30.875	−27.0	−35.8	8.8	−34.94	24
−27.7	−31.9	−31.6	−28.6	−28.1	−29.7	−34.1	−27.6	−33.1	−33.2	−29.500	−25.5	−33.2	7.7	−34.17	25
−36.0	−33.4	−33.6	−33.8	−32.8	−31.4	−32.6	−31.6	−30.2	−31.2	−32.983	−28.0	−38.0	10.0	−36.11	26
−34.6	−37.1	−38.0	−37.6	−37.6	−36.1	−35.6	−35.8	−38.0	−37.6	−34.5[illegible]0	−26.5	−39.0	12.5	−37.00	27
−33.8	−37.1	−34.4	−35.6	−34.8	−34.4	−33.7	−31.6	−35.6	−33.1	−35.183	−31.5	−39.5	8.0	−37.33	28
−34.4	−36.4	−33.6	−36.1	−37.8	−37.0	−34.4	−37.1	−40.1[b]	−36.1	−35.967	−30.0	−40.5	10.5	−37.78	29
−38.8[b]	−38.1[b]	−38.6[b]	−37.6[b]	−39.6[b]	−37.3[b]	−37.6[b]	−35.5[b]	−35.6	−[illegible]4	**−37.558**	−31.9	**−43.0**	11.1	**−38.67**	30
−25.040	−24.987	**−25.370**	−24.943	−24.120	−24.137	−24.203	−23.980	−24.290	−23.940	−24.5328	−18.11	−31.42	13.31	....	
−31.67	−31.67	**−31.89**	−31.61	−31.17	−31.17	−31.22	−31.11	−31.28	−31.06	−31.41	−27.83	−35.22	7.39	−31.41	

[a] From the observed hourly readings.

[b] From spirit (alcohol) thermometer.

DECEMBER, 1881.

TABLE XLVIII.—*Temperature of the air, December, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	−31.4	−31.6	−31.1	−30.1	−31.9	−31.1	−31.1	−29.1	−28.6	−27.6	−27.6	−27.6	−27.8	−27.8
2	−23.8	−26.4	−25.8	−23.1	−21.1	−21.1	−19.6	−22.2	−17.6	−13.8	−16.4	−14.0	−12.7	−11.0
3	−22.8	−22.6	−23.6	−25.2	−24.5	−24.1	−26.7	−26.4	−24.6	−26.6	−25.4	−25.3	−23.6	−23.8
4	−27.8	−28.6	−29.6	−31.1	−32.6	−27.6	−29.1	−30.1	−29.4	−28.6	−24.6	−23.6	−22.4	−20.1
5	−17.1	−19.6	−19.6	−19.9	−20.8	−21.1	−21.6	−21.8	−21.6	−24.5	−24.6	−23.9	−22.9	−25.6
6	−34.1	−33.6	−33.4	−32.5	−32.9	−33.0	−35.6	−33.6	−32.4	−32.6	−32.4	−35.2	−33.6	−32.6
7	−32.9	−32.6	−28.6	−32.8	−33.6	−33.6	−33.7	−35.0	−31.6	−32.1	−31.1	−33.4	−31.5	−32.6
8	−32.4	−32.4	−30.4	−30.6	−30.6	−30.1	−30.6	−30.4	−30.5	−30.4	−30.1	−32.1	−33.6	−30.1
9	−30.7	−30.9	−28.4	−30.2	−30.8	−30.7	−32.8	−33.3	−32.8	−30.8	−29.6	−28.6	−28.6	−26.6
10	−24.6	−23.6	−24.1	−23.6	−23.1	−23.4	−23.1	−22.6	−26.4	−26.0	−24.6	−24.4	−25.5	−25.2
11	−32.7	−34.6	−33.1	−32.6	−32.8	−33.6	−34.6	−32.6	−32.4	−30.6	−31.6	−31.1	−30.9	−33.4
12	−36.1	−37.5	−35.2	−35.6	−39.2	−34.6	−34.6	−35.6	−34.6	−32.6	−31.6	−31.1	−31.0	−30.6
13	−29.1	−28.6	−28.4	−28.4	−28.5	−28.6	−28.5	−28.4	−28.5	−28.7	−28.6	−28.8	−29.4	−29.1
14	−28.1	−27.6	−27.6	−27.6	−27.6	−27.6	−27.1	−25.6	−25.6	−26.1	−26.4	−26.6	−27.6	−28.6
15	−27.4	−27.6	−33.6	−33.9	−35.6	−36.9	−39.0	−33.1	−41.2	−36.1	−44.2	−41.0	−41.7	−41.2
16	−42.8	−43.0	−38.4	−43.2	−41.2	−46.5	−41.7	−42.2	−40.2	−43.2	−41.7	−42.2	−40.0	−39.2
17	−39.2	−39.7	−39.2	−38.2	−40.2	−39.0	−40.0	−39.2	−39.2	−40.2	−41.7	−40.2	−38.7	−39.7
18	−44.2	−43.7	−42.2	−42.7	−46.7	−44.2	−41.2	−41.7	−44.2	−41.4	−42.2	−40.7	−41.7	−41.7
19	−42.1	−43.2	−41.7	−42.2	−42.2	−42.5	−43.2	−42.7	−45.7	−42.2	−40.2	−47.2	−45.7	−43.2
20	−46.2	−46.2	−40.2	−39.2	−38.2	−44.2	−44.7	−46.2	−46.7	−47.5	−47.9	−50.4	−44.7	−50.9
21	−37.4	−35.0	−35.9	−34.6	−34.1	−32.0	−33.6	−33.6	−32.1	−32.6	−32.0	−32.4	−32.8	−30.9
22	−28.1	−28.1	−27.6	−27.6	−28.0	−27.7	−26.6	−26.7	−28.8	−27.6	−26.9	−27.6	−27.8	−27.0
23	−28.1	−28.1	−26.8	−27.6	−28.1	−26.6	−25.1	−25.5	−24.6	−25.1	−23.8	−24.1	−23.6	−23.5
24	−23.4	−23.6	−24.1	−24.1	−24.4	−24.1	−24.1	−24.1	−24.1	−24.1	−24.1	−25.5	−24.9	−24.6
25	−34.1	−33.2	−38.2	−35.6	−37.6	−39.9	−33.6	−32.8	−34.6	−32.1	−31.6	−31.1	−27.6	−26.6
26	−23.5	−23.4	−22.9	−23.1	−23.6	−22.8	−22.9	−23.4	−23.6	−23.6	−23.6	−23.6	−23.6	−23.5
27	−27.1	−28.6	−28.6	−28.6	−28.8	−27.4	−28.6	−28.1	−29.9	−33.1	−34.7	−34.4	−34.1	−33.4
28	−35.6	−35.6	−40.2	−39.2	−39.2	−32.1	−34.1	−36.1	−39.2	−36.1	−44.2	−40.2	−44.2	−41.2
29	−32.9	−32.6	−32.6	−31.6	−32.1	−32.6	−32.6	−38.7	−37.1	−40.2	−38.2	−42.2	−41.2	−42.7
30	−46.7	−46.7	−44.7	−43.7	−42.7	−39.9	−40.7	−39.7	−37.2	−36.4	−34.6	−33.1	−33.6	−32.9
31	−39.9	−41.2	−43.7	−44.1	−42.7	−45.1	−42.7	−46.2	−40.2	−40.5	−38.2	−38.3	−36.9	−33.0
Means	−32.332	−32.571	−32.242	−32.339	**−32.754**	−32.377	−32.368	−32.474	−32.426	−32.032	−32.077	−32.255	−31.739	−31.364
Means in centigrade	−35.72	−35.89	−35.67	−35.72	**−36.00**	−35.78	−35.78	−35.83	−35.78	−35.56	−35.61	−35.72	−35.39	−35.22

DECEMBER, 1881.

TABLE XLVIII.—*Temperature of the air, December*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
−26.7	−26.7	−25.3	−24.2	−23.5	−22.4	−23.3	−24.4	−25.4	−24.9	−27.550	−22.3	−33.5	11.2	−33.11	1
−10.6	−10.4	−11.6	−11.4	−11.6	−11.1	−13.6	−16.3	−19.6	−20.4	**−16.883**	**−10.0**	−27.3	17.3	**−27.17**	2
−23.4	−21.6	−23.1	−23.6	−25.1	−25.9	−26.1	−25.9	−26.2	−27.6	−24.738	−15.0	−27.8	12.8	−31.50	3
−19.6	−21.6	−17.1	−16.6	−15.6	−15.6	−15.6	−14.6	−14.6	−15.3	−22.975	−14.6[a]	−32.0	17.4	−30.56	4
−22.8	−27.6	−25.8	−30.8	−25.6	−26.6	−30.6	−30.4	−33.1	−34.1	−24.667	−17.1[a]	−36.2	19.1	−31.50	5
−35.6	−35.4	−30.6	−36.4	−31.6	−31.5	−35.1	−30.8	−32.6	−32.6	−33.321	−29.0	−38.0	9.0	−36.28	6
−33.6	−33.1	−32.1	−33.4	−32.9	−35.1	−32.2	−32.6	−34.6	−30.6	−32.721	−27.0	−35.0[a]	8.0	−35.94	7
−32.6	−32.4	−32.6	−31.4	−35.6	−32.6	−33.8	−29.6	−33.9	−30.8	−31.650	−28.0	−35.6	7.6	−35.33	8
−27.4	−26.8	−27.2	−25.6	−29.1	−29.1	−27.4	−26.6	−25.3	−25.1	−28.933	−24.0	−34.0	10.0	−33.83	9
−23.6	−23.6	−24.5	−24.6	−26.5	−25.6	−27.6	−29.1	−30.6	−32.5	−25.388	−21.0	−33.0	12.0	−31.89	10
−36.1	−33.1	−32.9	−32.6	−37.1	−40.2	−34.4	−37.1	−35.8	−34.8	−33.779	−30.6[a]	−41.0	10.4	−36.56	11
−30.4	−30.1	−29.6	−29.4	−29.3	−29.3	−29.1	−29.1	−28.7	−28.6	−32.229	−28.6[a]	−41.0	12.4	−35.67	12
−28.8	−29.2	−29.1	−28.8	−28.6	−28.4	−28.2	−28.1	−27.6	−27.9	−28.596	−27.6[a]	−30.1	2.5	−33.67	13
−30.4	−29.9	−32.0	−30.1	−33.5	−30.6	−31.0	−32.2	−33.3	−31.3	−28.917	−24.5	−35.5	11.0	−33.83	14
−41.7	−44.2	−42.2	−42.7	−43.2	−44.2	−40.2	−46.2	−42.4	−44.2	−39.321	−27.4[a]	−48.5	21.1	−39.61	15
−38.7	−40.2	−38.5	−38.2	−40.2	−38.7	−41.2	−39.0	−39.0	−41.5	−40.862	−38.2[a]	−49.0	10.8	−40.50	16
−38.7	−39.5	−42.7	−41.2	−46.2	−43.0	−42.2	−41.2	−46.2	−43.7	−40.792	−38.2[a]	−47.5	9.3	−40.44	17
−44.2	−40.2	−42.7	−41.7	−40.2	−45.2	−42.7	−45.5	−44.4	−41.2	−42.771	−40.2[a]	−47.0	6.8	−41.56	18
−45.2	−43.2	−49.7	−41.2	−44.3	−46.1	−49.5	−44.9	−49.2	−48.2	**−44.396**	−40.2[a]	−49.7[a]	9.5	**42.44**	19
−44.9	−48.2	−43.2	−44.2	−41.7	−43.2	−41.2	−37.5	−37.8	−37.4	−43.854	−37.4[a]	**−52.2**	14.8	−42.11	20
−30.6	−30.2	−30.1	−30.6	−28.6	−29.6	−29.3	−29.8	−29.6	−28.6	−31.917	−28.0	−37.4[a]	9.4	−35.50	21
−26.8	−27.8	−27.6	−27.9	−28.1	−27.9	−28.1	−28.1	−28.1	−27.9	−27.683	−26.0	−29.2	3.2	−33.17	22
−23.5	−23.9	−24.1	−24.2	−23.8	−24.1	−24.1	−24.1	−23.8	−23.9	−25.004	−23.0	−28.7	5.7	−31.67	23
−24.4	−25.6	−29.1	−28.6	−29.4	−32.0	−30.1	−30.2	−33.6	−33.4	−26.483	−19.0	−34.7	15.7	−32.50	24
−27.1	−25.6	−24.6	−24.9	−24.6	−24.5	−24.1	−24.1	−24.1	−24.1	−29.846	−22.0	−41.0	19.0	−34.33	25
−23.1	−22.6	−22.6	−23.6	−23.8	−23.6	−23.6	−24.6	−25.1	−26.6	−23.596	−21.5	−27.3	5.8	−30.89	26
−32.6	−35.4	−37.4	−33.9	−36.6	−41.0	−36.4	−34.1	−37.2	−35.4	−32.738	−21.0	−41.0	20.0	−35.94	27
−42.2	−44.2	−40.7	−37.7	−40.2	−41.2	−40.7	−37.9	−37.1	−36.8	−38.996	−32.0	−46.0	14.0	−39.44	28
−44.7	−39.5	−45.1	−44.3	−43.2	−44.7	−42.7	−42.2	−41.4	−45.2	−39.179	−31.6[a]	−47.5	15.9	−39.56	29
−33.1	−32.3	−33.1	−32.4	−32.4	−35.6	−37.9	−38.1	−35.6	−37.2	−37.512	−32.0	−46.7[a]	14.7	−38.61	30
−31.4	−29.6	−28.6	−27.6	−26.1	−24.1	−27.6	−26.1	−24.9	−22.1	−35.033	−22.0	−47.0	25.0	−37.22	31
−31.435	−31.410	−31.497	**−31.090**	−31.554	−32.022	−31.922	−31.626	−32.284	−32.061	−32.0106	−26.42	−38.72	12.30	....	
−35.22	−35.22	−35.28	**−35.06**	−35.33	−35.56	−35.50	−35.33	−35.72	−35.61	−35.56	−32.44	−39.28	6.84	−35.56	

[a] From the observed hourly readings.

JANUARY, 1882.

TABLE XLIX.—*Temperature of the air, January*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	-23.1	-21.6	-20.1	-21.1	-23.1	-24.1	-25.1	-25.6	-25.6	-27.1	-23.6	-25.1	-24.2	-28.6
2	-24.5	-24.3	-24.6	-23.9	-23.4	-22.6	-22.5	-21.1	-22.0	-22.6	-22.6	-22.8	-22.8	-23.1
3	-24.6	-25.6	-25.9	-25.6	-25.6	-27.1	-27.3	-27.0	-27.1	-28.3	-27.6	-28.6	-31.1	-32.1
4	-30.7	-31.1	-29.7	-30.1	-29.6	-28.6	-28.8	-28.6	-28.6	-27.8	-27.8	-28.6	-26.6	-31.7
5	-27.4	-27.0	-26.8	-27.4	-27.8	-27.8	-29.6	-31.6	-31.1	-33.1	-30.6	-30.6	-32.1	-33.1
6	-35.1	-35.6	-36.1	-35.6	-34.6	-34.9	-35.8	-35.6	35.8	-35.6	-35.6	-35.1	-36.1	-39.5
7	-33.6	-33.6	-32.6	-30.9	-33.6	-31.4	-30.4	-30.5	-31.1	-30.3	-29.6	-31.8	-32.6	-32.3
8	-30.6	-28.2	-31.5	-31.8	-36.6	-42.4	-39.4	-40.2	-39.7	-42.0	-41.7	-42.2	-42.2	-42.4
9	-47.7	-44.0	-47.2	-48.4	-47.7	-46.2	-48.2	-45.2	-47.9	-47.2	-50.2	-50.2	-56.1	-54.6
10	-50.7	-50.9	-53.7	-52.3	-52.7	-53.4	-53.4	-52.6	-57.2	-48.2	-52.7	-53.2	-50.3	-53.4
11	-50.4	-52.9	-51.8	-49.2	-51.6	-47.7	-47.4	-46.6	-44.4	-43.3	-42.7	-44.2	-43.2	-42.3
12	-31.4	-33.8	-35.1	-34.8	-33.8	-35.1	-36.6	-36.8	-36.9	-36.1	-35.6	-35.6	-34.6	-35.0
13	-37.0	-37.7	-37.1	-37.6	-39.4	-39.2	-39.9	-39.2	-40.2	-44.2	-42.1	-43.2	-48.2	-47.2
14	-48.5	-55.7	-54.5	-53.6	-56.2	-54.8	-55.9	-49.7	-47.2	-45.0	-42.2	-40.2	-39.9	-39.2
15	-36.6	-37.0	-36.7	-37.1	-34.7	-34.6	-34.1	-33.9	-32.1	-31.0	-30.1	-30.1	-28.9	-28.4
16	-27.8	-29.6	-32.1	-29.8	-31.1	-30.7	-30.9	-29.3	-26.7	-25.6	-23.4	-13.1	-12.9	-*11.0*
17	-22.6	-24.7	-25.9	-28.8	-29.4	-31.1	-31.6	-31.8	-31.6	-31.5	-31.6	-31.7	-33.8	-35.8
18	-39.2	-42.4	-43.3	-43.2	-47.1	-43.5	-42.7	-42.9	-40.0	-43.0	-40.2	-41.4	-40.7	-40.0
19	-34.1	-36.0	-34.6	-35.7	-35.6	-36.3	-39.2	-39.2	-40.0	-40.7	-40.0	-40.4	-42.0	-43.7
20	-42.0	-41.7	-44.0	-38.2	-43.6	-44.4	-43.4	-43.0	-41.1	-47.4	-45.5	-42.7	-43.2	-42.7
21	-34.0	-36.9	-37.1	-36.9	-35.2	-36.3	-36.0	-35.4	-39.4	-38.5	-37.4	-34.6	-34.7	-37.0
22	-40.7	-42.2	-42.6	-42.5	-42.0	-43.7	-41.0	-42.1	-45.6	-44.1	-45.3	-44.2	-45.4	-43.6
23	-48.4	-48.2	-49.7	-49.7	-49.2	-47.1	-47.2	-45.9	-46.0	-40.2	-29.4	-27.8	-25.4	-25.1
24	-39.2	-42.0	-42.4	-42.6	-44.7	-43.1	-41.2	-41.1	-43.2	-40.2	-44.5	-47.0	-48.2	-44.3
25	-46.7	-46.4	-45.9	-45.7	-46.7	-46.6	-46.3	-45.6	-40.0	-43.8	-43.2	-43.5	-46.0	-46.2
26	-48.2	-49.7	-49.6	-48.7	-47.6	-49.1	-49.7	-50.2	-47.0	-48.2	-48.0	-48.4	-47.6	-49.2
27	-44.0	-45.7	-45.9	-44.1	-44.2	-44.4	-42.7	-45.7	-42.2	-44.3	-42.3	-42.4	-44.1	-45.2
28	-46.6	-47.1	-45.7	-47.1	-47.0	-45.2	-44.5	-43.7	-43.0	-40.2	-39.2	-40.9	-41.1	-41.6
29	-42.5	-44.7	-43.7	-43.3	-46.7	-47.4	-46.4	-50.8	-48.3	-48.1	-53.2	-52.1	-48.2	-48.3
30	-52.7	-45.2	-46.7	-43.7	-42.7	-42.2	-38.2	-37.6	-37.3	-34.6	-33.7	-34.0	-35.1	-34.9
31	-43.2	-42.7	-42.3	-42.7	-38.7	-38.2	-39.9	-38.1	-31.1	-31.7	-33.6	-35.6	-36.5	-33.5
Means	-38.187	-38.845	-39.190	-38.777	**-39.419**	-39.329	-39.203	-38.922	-38.368	-38.190	-37.581	-37.461	-37.865	-38.226
Means in centigrade	-39.00	-39.33	-39.56	-39.33	**-39.67**	-39.61	-39.56	-39.39	-39.11	-39.00	-38.67	-38.61	-38.83	-39.00

JANUARY, 1882.

TABLE XLIX.—*Temperature of the air, January, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
−29.8	−27.1	−28.1	−26.1	−24.1	−24.6	−26.1	−22.6	−28.2	−26.2	−25.038	−21.5	−30.1	8.6	−31.67	1
−23.3	−24.6	−24.6	−23.6	−22.8	−23.8	−23.6	−25.6	−26.6	−25.4	−23.612	−20.0	−27.3	7.3	−30.89	2
−33.1	−31.0	−31.4	−33.0	−34.6	−36.2	−34.4	−33.1	−32.0	−32.1	−29.767	−24.0	−37.0	13.0	−34.33	3
−28.1	−28.6	−33.6	−29.9	−28.3	−29.4	−29.6	−25.5	−26.8	−25.7	−28.908	−24.0	−34.0	10.0	−33.83	4
−33.1	−33.6	−32.4	−30.8	−36.6	−35.4	−36.1	−37.1	−37.6	−35.4	−31.838	−26.8[a]	−39.0	12.2	−35.44	5
−42.2	−41.2	−39.2	−39.4	−39.2	−37.2	−38.2	−35.4	−34.1	−34.8	−36.746	−32.0	−44.0	12.0	−38.17	6
−30.9	−29.6	−28.2	−29.9	−31.0	−31.0	−29.6	−31.6	−30.6	−32.6	−31.221	−28.2[a]	−37.5	9.3	−35.11	7
−37.9	−34.1	−36.1	−39.2	−36.1	−38.5	−41.4	−44.2	−49.2	−43.2	−38.783	−28.2[a]	−49.2[a]	21.0	−39.33	8
−56.4	−55.0	−52.2	−52.4	−51.5	−54.1	−52.2	−49.2	−51.8	−51.2	−50.283	−44.0[a]	−57.5	13.5	−45.72	9
−55.7	−51.5	−52.4	−50.8	−52.7	−49.4	−50.4	−49.3	−53.2	−47.2	**−51.971**	−47.2[a]	**−58.2**	11.0	**−46.67**	10
−41.2	−39.7	−35.8	−34.1	−36.1	−34.1	−34.3	−30.8	−34.1	−33.7	−42.150	−30.8[a]	−55.0	24.2	−41.22	11
−34.4	−34.6	−34.6	−34.4	−33.8	−34.8	−35.1	−35.6	−35.8	−35.6	−34.996	−31.4[a]	−37.8	6.4	−37.22	12
−45.2	−46.2	−47.4	−50.2	−48.2	−45.2	−48.5	−45.7	−52.2	−52.2	−43.883	−37.0[a]	−56.8	19.8	−42.17	13
−38.7	−38.2	−38.0	−37.4	−37.4	−37.4	−37.4	−36.8	−36.8	−36.1	−44.033	−36.1[a]	−57.0	20.9	−42.22	14
−28.4	−27.7	−27.3	−27.1	−26.6	−26.8	−26.6	−28.9	−28.7	−27.6	−30.875	−26.6[a]	−38.0	11.4	−34.94	15
−16.0	−15.0	−15.8	−14.8	−14.6	−15.6	−16.6	−17.8	−19.6	−20.6	**−21.683**	**−9.5**	−32.1[a]	22.6	**−29.83**	16
−34.6	−34.6	−33.2	−33.9	−34.6	−35.6	−37.0	−37.8	−40.7	−35.4	−32.471	−22.6[a]	−41.5	18.9	−35.83	17
−38.4	−40.0	−38.2	−39.3	−40.0	−38.0	−38.0	−37.2	−35.7	−31.9	−40.262	−31.9[a]	−47.1[a]	15.2	−40.17	18
−43.0	−43.7	−41.5	−39.8	−42.3	−40.5	−40.5	−39.9	−42.2	−40.3	−39.633	−34.1[a]	−45.2	11.1	−39.78	19
−38.9	−41.8	−39.9	−33.0	−35.1	−36.8	−35.9	−38.2	−32.7	−31.8	−40.292	−31.8[a]	−47.4[a]	15.6	−40.17	20
−42.2	−40.4	−40.4	−41.2	−40.3	−42.5	−42.4	−42.3	−42.7	−42.7	−38.604	−32.0	−42.7[a]	10.7	−39.22	21
−43.7	−43.2	−41.4	−43.0	−42.7	−46.1	−45.0	−45.4	−42.6	−43.7	−43.408	−40.7[a]	−47.7	7.0	−41.89	22
−24.5	−25.8	−27.6	−27.0	−26.7	−28.1	−27.6	−30.8	−38.0	−28.8	−36.008	−24.5[a]	−49.7[a]	25.2	−37.78	23
−49.3	−45.2	−48.2	−44.2	−46.2	−46.5	−47.2	−46.4	−45.0	−44.7	−44.442	−32.0	−49.3[a]	17.3	−42.44	24
−45.3	−48.2	−45.2	−43.8	−46.0	−45.8	−46.0	−46.2	−48.2	−48.2	−45.646	−40.0[a]	−48.5	8.5	−43.11	25
−47.4	−47.5	−48.2	−49.0	−47.0	−46.2	−46.8	−47.6	−46.2	−43.2	−47.929	−43.2[a]	−51.0	7.8	−44.39	26
−46.1	−44.7	−44.2	−45.5	−44.7	−47.4	−46.2	−44.2	−46.2	−46.2	−44.692	−42.2[a]	−47.4[a]	5.2	−42.61	27
−40.2	−41.2	−40.2	−40.1	−41.2	−41.4	−41.4	−41.0	−39.2	−41.2	−42.500	−39.2[a]	−47.1[a]	7.9	−41.39	28
−47.6	−51.0	−45.4	−44.2	−47.7	−47.7	−46.4	−48.4	−45.2	−46.0	−47.221	−42.5[a]	−54.4	11.9	−44.00	29
−33.6	−34.4	−36.0	−36.1	−37.4	−38.5	−37.4	−41.5	−43.1	−42.2	−39.117	−33.6[a]	−52.7[a]	19.1	−39.50	30
−36.5	−36.6	−35.6	−37.4	−36.8	−38.7	−42.4	−42.2	−43.2	−44.2	−38.392	−30.0	−45.9	15.0	−39.11	31
−38.248	−37.935	−37.494	**−37.116**	−37.494	−37.848	−38.074	−38.010	−38.974	−37.745	−38.2711	−31.86	−45.42	13.56	......	
−39.00	−38.83	−38.61	**−38.39**	−38.61	−38.78	−38.94	−38.89	−39.44	−38.72	−39.04	−35.50	−43.00	7.5[illegible]	−39.04	

[a] From the observed hourly readings.

FEBRUARY, 1882.

TABLE L.—*Temperature of the air, February, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	−47.3	−48.1	−50.9	−50.8	−50.8	−50.9	−50.1	−49.6	−48.1	−49.1	−47.1	−48.0	−50.1	−50.8
2	−49.1	−47.4	−48.8	−47.2	−47.5	−49.6	−49.3	−45.4	−49.1	−51.9	−47.1	−50.1	−53.9	−52.8
3	−56.3	−59.1	−60.6	−60.2	−61.8	−62.1	−56.6	−58.8	−59.1	−55.3	−55.1	−54.9	−53.9	−53.8
4	−45.6	−46.3	−47.3	−47.5	−48.1	−47.5	−46.3	−45.9	−45.3	−46.6	−47.1	−46.1	−48.0	−47.1
5	−53.6	−53.6	−53.1	−53.9	−53.1	−51.7	−52.6	−54.0	−54.1	−52.1	−54.1	−51.6	−47.6	−47.8
6	−55.1	−53.3	−53.7	−54.3	−53.1	−52.1	−53.4	−56.1	−51.1	53.9	−53.1	−57.0	−53.1	−51.1
7	−57.1	−58.6	−57.4	−57.9	−56.3	−56.1	−54.6	−56.9	−54.0	−54.1	−55.1	−55.6	−51.4	−51.6
8	−55.9	−54.4	−54.0	−53.7	−52.6	−52.1	−50.7	−51.2	−51.9	−44.5	−52.1	−46.6	−52.3	−49.0
9	−53.1	−52.9	−54.8	−53.6	−52.1	−52.7	−52.3	−52.5	−50.7	−51.0	−51.0	−51.7	−48.1	−47.2
10	−52.6	−53.1	−53.0	−54.1	−54.0	−53.3	−53.6	−53.0	−52.0	−52.7	−52.1	−52.7	−52.6	−50.0
11	−54.6	−59.9	−59.1	−60.6	−57.9	−55.1	−57.1	−55.6	−52.6	−55.1	−52.4	−49.1	−51.9	−50.3
12	−55.6	−55.1	−55.4	−53.6	−52.3	−53.6	−53.3	−52.7	−51.1	−52.3	−50.1	−52.2	−53.1	−54.1
13	−56.9	−57.7	−58.5	−58.1	−58.8	−58.0	−58.6	−58.8	−58.3	−56.8	−59.4	−59.4	−58.1	−61.1
14	−57.1	−55.3	−48.1	−53.3	−53.5	−50.2	−54.8	−52.9	−51.4	−50.1	−51.8	−51.2	−51.1	−51.9
15	−54.4	−55.1	−55.2	−59.6	−58.9	−55.8	−52.4	−56.3	−49.1	−55.0	−58.3	−52.1	−48.8	−45.3
16	−53.3	−52.6	−55.5	−55.6	−52.1	−55.0	−55.2	−56.5	−53.9	−55.1	−54.1	−58.4	−55.6	−56.9
17	−32.1	−31.1	−30.7	−33.5	−34.2	−34.0	−33.8	−34.1	−32.9	−33.1	−32.1	−31.8	−32.5	−32.9
18	−45.2	−42.8	−44.7	−45.3	−43.5	−44.8	−41.0	−43.1	−41.1	−36.5	−40.1	−37.1	−37.1	−37.1
19	−42.4	−42.3	−42.1	−41.3	−40.9	−40.4	−42.1	−41.3	−41.7	−41.6	−40.6	−42.2	−43.3	−43.8
20	−49.3	−49.7	−48.6	−51.4	−50.1	−50.3	−51.7	−50.2	−47.3	−48.3	−45.6	−45.4	−41.1	−44.0
21	−41.7	−43.3	−42.8	−43.7	−42.8	−44.6	−48.1	−48.9	−48.9	−49.2	−51.2	−52.1	−51.2	−51.3
22	−42.1	−43.1	−43.6	−43.2	−43.1	−43.3	−42.6	−42.6	−42.4	−42.1	−40.5	−43.1	−43.1	−43.3
23	−50.6	−50.1	−53.3	−53.1	−50.0	−50.6	−53.1	−50.2	−48.2	−49.2	−49.0	−45.9	−43.7	−49.8
24	−46.1	−46.7	−45.6	−44.8	−46.3	−46.1	−45.6	−39.6	−44.1	−44.0	−44.1	−44.4	−40.6	−44.1
25	−27.1	−26.7	−25.3	−26.6	−28.1	−30.7	−22.0	−28.9	−20.6	−17.6	−20.2	−11.6	−15.0	−16.6
26	−21.6	−21.8	−22.1	−22.1	−22.3	−22.1	−22.6	−23.7	−25.5	−25.8	−26.1	−26.4	−26.0	−26.9
27	−32.8	−32.6	−32.8	−34.6	−34.7	−34.7	−33.3	−33.8	−35.4	−34.7	−37.6	−38.7	−37.0	−37.5
28	−39.6	−38.9	−39.1	−38.7	−40.1	−41.1	−41.3	−45.6	−42.0	−42.6	−46.6	−46.0	−45.7	−47.3
Means	−47.436	−47.577	−47.718	**−48.296**	−47.821	−47.804	−47.432	−47.793	−46.496	−46.439	−46.918	−46.479	−45.925	−46.264
Means in centigrade	−44.11	−44.22	−44.28	**−44.61**	−44.33	−44.33	−44.11	−44.33	−43.61	−43.56	−43.83	−43.61	−43.28	−43.50

FEBRUARY, 1882.

TABLE L.—*Temperature of the air, February*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
−49.9	−48.5	−48.3	−48.3	−48.1	−46.1	−49.1	−49.1	−49.1	−48.1	−49.012	−46.1[a]	−51.0	**4.9**	−45.00	1
−51.1	−52.1	−54.1	−56.4	−55.1	−56.1	−56.1	−55.1	−56.3	−54.1	−51.488	−45.4[a]	−57.8	12.4	−46.39	2
−51.5	−49.6	−47.1	−44.1	−45.4	−46.1	−45.1	−44.6	−44.9	−43.3	−52.888	−44.1[a]	**−62.1**[a]	18.0	−47.17	3
−53.6	−43.3	−46.1	−48.1	−48.1	−48.4	−49.1	−51.7	−54.6	−50.6	−47.846	−45.6[a]	−54.6[a]	9.0	−44.33	4
−45.1	−47.8	−47.1	−52.1	−51.1	−52.0	−49.4	−54.1	−52.3	−49.1	−51.375	−45.1[a]	−55.6	10.5	−46.33	5
−56.1	−56.0	−51.4	−55.1	−56.3	−51.1	−53.6	−52.4	−50.0	−55.1	−53.646	−50.0[a]	−59.3	9.3	−47.56	6
−54.1	−54.0	−55.8	−56.3	−56.4	−54.6	−55.1	−57.6	−53.9	−55.6	−55.421	−51.4[a]	−58.6[a]	7.2	−48.56	7
−50.6	−47.3	−52.3	−51.1	−49.1	−50.3	−49.7	−51.1	−49.9	−51.3	−50.988	−44.5[a]	−55.9[a]	11.4	−46.11	8
−50.0	−49.1	−47.1	−49.1	−49.1	−48.6	−49.1	−49.3	−50.1	−48.3	−50.562	−47.1[a]	−54.8[a]	7.7	−45.89	9
−52.0	−53.1	−51.1	−51.3	−52.1	−51.1	−51.9	−54.1	−51.1	−51.1	−52.404	−50.4[a]	−54.4	4.4	−46.89	10
−54.1	−50.0	−57.6	−55.3	−51.3	−56.0	−51.6	−54.6	−50.1	−50.5	−54.267	−49.1[a]	−60.6[a]	11.5	−47.94	11
−54.1	−53.1	−51.9	−52.1	−54.1	−54.6	−53.3	−55.2	−54.1	−53.3	−53.346	−50.1[a]	−58.0	7.9	−47.39	12
−59.1	−58.9	−59.4	−53.2	−56.1	−58.2	−55.2	−56.1	−52.1	−54.3	**−57.546**	−52.1[a]	−61.1[a]	9.0	**−49.72**	13
−51.1	−51.1	−52.6	−51.1	−55.6	−53.3	−50.3	−55.6	−55.7	−53.3	−52.600	−48.1[a]	−59.4[a]	11.3	−47.00	14
−51.4	−44.6	−47.1	−48.9	−53.1	−46.6	−50.4	−52.9	−51.6	−52.1	−52.292	−44.6[a]	−60.4	15.8	−46.83	15
−52.1	−57.3	−53.1	−54.1	−43.9	−47.6	−45.0	−[a]33.3[b]	−41.4	−40.7	−51.596	−33.3[a]	−60.6	**27.3**	−46.44	16
−32.5	−33.6	−33.6	−35.5	−34.2	−38.3	−38.3	−36.6	−39.9	−42.9	−34.342	−30.7[a]	−42.9[a]	12.2	−36.83	17
−37.6	−38.3	−38.6	−39.1	−43.1	−41.1	−40.1	−39.0	−40.1	−40.3	−40.696	−34.0	−45.5	11.5	−40.39	18
−43.6	−45.6	−46.0	−43.1	−45.1	−48.0	−45.9	−44.9	−46.6	−48.6	−43.475	−40.4[a]	−48.6[a]	8.2	−41.94	19
−40.0	−42.6	−42.8	−40.6	−39.9	−38.1	−40.0	−39.1	−40.3	−40.4	−44.867	−37.0	−51.7[a]	14.7	−42.72	20
−50.9	−48.0	−45.3	−46.0	−44.6	−41.3	−43.1	−43.1	−43.2	−40.1	−46.058	−40.1[a]	−52.6[a]	12.5	−43.39	21
−45.0	−43.6	−44.1	−49.1	−47.1	−45.6	−49.4	−46.6	−48.6	−46.3	−44.312	−40.5[a]	−51.8	11.3	−42.39	22
−45.1	−48.1	−47.6	−47.1	−48.1	−43.6	−49.2	−43.6	−45.9	−42.1	−48.217	−42.1[a]	−53.6	11.5	−44.56	23
−42.9	−40.1	−38.1	−34.1	−31.4	−31.5	−29.5	−28.4	−28.2	−26.7	−39.708	−26.7[a]	−47.5	20.8	−39.83	24
−13.0	−13.6	−14.2	−13.6	−11.6	−16.8	−17.1	−19.8	−18.9	−20.1	**−19.822**	**−10.0**	−30.7[a]	20.7	**−28.78**	25
−26.6	−26.8	−28.7	−27.9	−28.1	−29.0	−29.3	−30.4	−31.6	−30.6	−26.000	−21.5	−32.5	11.0	−32.22	26
−39.9	−37.7	−36.0	−36.6	−36.0	−35.5	−36.7	−37.1	−38.3	−38.4	−35.933	−31.5	−40.5	9.0	−37.72	27
−47.6	−46.0	−36.6	−42.1	−39.3	−39.6	−40.1	−35.1	−27.4	−24.1	−40.521	−22.2	−49.0	26.8	−40.28	28
−46.450	−45.707	−45.489	−45.764	−45.479	−45.325	−45.454	−45.375	−45.221	**−44.693**	−46.472	−40.12	−52.54	12.42	---- ---	
−43.56	−43.17	−43.06	−43.17	−43.06	−42.94	−43.00	−43.00	−42.89	**−42.61**	−43.59	−40.06	−46.94	6.89	−43.59	

[a] From the observed hourly readings. [b] Mercury yet frozen.

MARCH, 1882.

TABLE LI.—*Temperature of the air, March, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	-21.8	-24.4	-21.8	-24.4	-17.5	-19.8	-21.4	-22.5	-18.1	-21.2	-20.0	-21.6	-18.4	-26.1
2	-28.5	-28.4	-31.1	-29.5	-30.8	-34.8	-33.0	-34.3	-32.3	-35.4	-33.2	-28.8	-29.6	-27.6
3	-37.4	-36.5	-35.7	-36.0	-35.6	-33.8	-32.3	-31.7	-31.0	-30.4	-30.6	-29.6	-31.8	-30.2
4	-32.1	-32.4	-33.0	-32.3	-32.1	-32.2	-33.2	-36.0	-37.8	-38.1	-38.6	-37.4	-36.6	-36.6
5	-36.0	-36.7	-36.1	-36.9	-39.1	-38.7	-39.4	-42.6	-42.6	-42.4	-42.8	-44.1	-40.8	-39.2
6	-29.8	-30.1	-29.7	-27.0	-27.1	-27.4	-27.1	-27.9	-27.8	-28.6	-29.0	-28.6	-29.6	-29.6
7	-37.8	-40.1	-42.6	-44.7	-44.1	-43.7	-43.1	-42.0	-39.6	-36.2	-37.6	-35.2	-35.1	-33.6
8	-32.9	-34.1	-35.6	-36.7	-35.6	-37.6	-37.0	-33.9	-34.8	-32.2	-32.2	-32.6	-32.6	-32.4
9	-36.4	-34.9	-36.1	-36.1	-35.8	-35.4	-36.6	-35.9	-35.1	-30.6	-32.1	-34.1	-31.1	-32.1
10	-27.7	-29.6	-29.7	-25.1	-26.9	-25.2	-22.1	-25.0	-23.1	-19.8	-23.1	-22.5	-23.0	-21.8
11	-18.9	-18.1	-17.7	-15.8	-15.9	-15.6	-14.8	-14.1	-14.1	-13.6	-13.1	-12.6	-12.0	-12.1
12	-9.4	-9.1	-8.9	-9.6	-18.8	-17.6	-18.1	-20.6	-20.5	-21.4	-21.4	-21.6	-21.6	-25.1
13	-29.9	-33.5	-35.6	-36.7	-35.1	-34.5	-37.2	-37.3	-36.1	-35.5	-31.6	-32.6	-33.6	-35.1
14	-35.6	-36.0	-36.6	-38.4	-38.2	-37.2	-35.3	-45.3	-42.2	-39.1	-35.1	-39.1	-38.1	-37.6
15	-40.6	-41.1	-42.6	-41.0	-42.6	-43.3	-40.0	-38.1	-39.9	-36.6	-35.2	-35.5	-36.1	-35.6
16	-38.1	-40.3	-40.1	-40.0	-42.2	-40.3	-38.0	-39.9	-36.1	-36.1	-35.1	-34.1	-35.0	-33.1
17	-35.6	-32.1	-34.9	-34.1	-33.1	-34.7	-34.6	-33.7	-31.5	-30.7	-31.2	-32.1	-31.1	-31.5
18	-32.1	-31.1	-31.7	-31.8	-32.0	-32.1	-31.6	-29.7	-27.1	-25.8	-25.6	-24.8	-26.1	-25.6
19	-26.5	-25.9	-21.7	-23.0	-25.1	-25.1	-24.6	-23.7	-24.7	-26.1	-24.6	-24.6	-26.5	-24.6
20	-34.6	-34.5	-34.1	-32.3	-31.7	-30.1	-29.1	-28.0	-26.6	-25.8	-24.9	-24.8	-24.4	-24.7
21	-12.5	-12.8	-12.4	-9.6	-7.1	-8.9	-8.9	-7.8	-7.9	-9.1	-10.1	-10.2	-13.6	-10.1
22	-28.7	-28.1	-31.9	-30.6	-31.7	-33.2	-32.1	-31.8	-32.6	-29.6	-29.1	-26.3	-31.4	-26.7
23	-28.6	-29.7	-29.5	-32.3	-32.6	-27.5	-30.8	-29.3	-26.1	-27.6	-26.2	-27.7	-27.1	-26.5
24	-35.6	-35.8	-36.5	-40.0	-39.3	-38.7	-35.9	-35.5	-40.6	-37.9	-32.1	-30.9	-24.6	-25.1
25	-43.4	-43.2	-43.1	-44.3	-46.2	-44.0	-41.9	-41.6	-42.6	-40.6	-38.1	-37.2	-36.3	-38.7
26	-41.0	-41.9	-37.6	-41.0	-39.9	-36.1	-36.1	-39.8	-33.1	-31.4	-28.6	-29.4	-28.6	-21.2
27	-32.3	-30.0	-30.8	-32.4	-30.9	-32.8	-33.0	-33.1	-30.3	-28.1	-30.2	-29.1	-29.1	-31.4
28	-35.9	-37.7	-30.8	-35.6	-32.1	-32.0	-39.0	-32.5	-26.6	-31.1	-30.8	-24.8	-28.1	-25.6
29	-30.9	-32.6	-31.8	-32.5	-30.7	-37.5	-30.6	-26.9	-26.1	-25.7	-28.1	-24.7	-27.1	-23.6
30	-32.0	-29.6	-31.1	-28.0	-31.0	-33.1	-27.9	-34.4	-28.2	-26.9	-20.7	-23.6	-17.7	-21.8
31	-12.5	-11.7	-12.3	-13.6	-14.7	-12.6	-14.4	-15.5	-14.7	-12.6	-13.6	-14.1	-15.9	-15.5
Means.	-30.810	-31.032	-31.068	-31.332	**-31.468**	**-31.468**	-30.939	-31.303	-29.994	-29.232	-28.535	-28.203	-28.142	**-27.755**
Means in centigrade	-34.89	-35.00	-35.06	-35.17	**-35.28**	**-35.28**	-34.94	-35.17	-34.44	-34.00	-33.61	-33.44	-33.39	**-33.22**

MARCH, 1882.

Table LI.—*Temperature of the air, March, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
–27.2	–27.6	–21.2	–25.6	–24.6	–18.6	–25.6	–28.3	–28.0	–28.1	–23.075	–12.3	–31.2	18.9	–30.61	1
–27.6	–30.6	–32.8	–33.5	–27.6	–35.8	–31.1	–34.6	–34.7	–33.3	–31.621	–20.2	–37.5	17.3	–35.33	2
–30.4	–31.6	–28.6	–30.1	–27.5	–26.5	–29.0	–30.1	–30.6	–30.6	–31.567	–27.0	–38.8	11.8	–35.33	3
–36.2	–35.6	–35.4	–34.9	–34.8	–34.6	–34.6	–34.8	–34.4	–34.9	–34.942	–30.0	–44.0	14.0	–37.17	4
–32.7	–37.4	–31.4	–30.1	–29.8	–29.5	–28.6	–29.4	–29.1	–29.6	–36.042	–28.6[a]	–46.6	18.0	–37.78	5
–30.2	–30.2	–30.5	–30.1	–31.1	–32.8	–34.0	–35.0	–34.4	–36.6	–30.175	–22.0	–38.0	16.0	–34.56	6
–32.9	–35.2	–33.8	–36.6	–35.5	–36.1	–33.9	–34.5	–33.8	–33.8	–37.562	–32.9[a]	–45.5	12.6	–38.67	7
–32.7	–34.2	–34.1	–33.6	–33.6	–33.9	–35.8	–30.1	–33.6	–34.6	–34.267	–32.2[a]	–39.0	6.8	–36.83	8
–29.6	–29.6	–31.0	–27.6	–26.6	–26.6	26.9	–26.1	–26.6	–27.1	–31.669	–25.0	–38.8	13.8	–35.39	9
–21.0	–20.4	–20.6	–22.9	–22.6	–25.6	–25.2	–22.1	–19.4	–18.8	–23.467	–18.8[a]	–29.7[a]	10.9	–30.83	10
–12.8	–11.9	–10.7	–11.5	–11.4	–13.6	–12.5	–13.8	–13.6	–13.4	**–13.900**	–10.7[a]	–19.4	8.7	**–25.50**	11
–23.7	–25.1	–26.1	–26.3	–27.8	–26.4	–27.1	–27.8	–27.6	–29.8	–21.308	–8.9[a]	–33.5	24.6	–29.61	12
–36.6	–35.1	–35.0	–35.1	–34.6	–33.8	–36.4	–36.0	–35.6	–36.1	–34.942	–29.9[a]	–40.0	10.1	–37.17	13
–39.6	–36.1	–39.3	–39.6	–38.1	–44.7	–39.5	–42.1	–44.1	–39.0	–38.996	–35.1[a]	–45.9	10.8	–39.44	14
–35.1	–40.6	–39.5	–32.4	–37.1	–40.9	–38.1	–40.7	–38.2	–41.9	–38.862	–32.4[a]	–44.0	11.6	–39.39	15
–33.2	–32.1	–34.0	–36.9	–34.4	–32.8	–35.1	–35.8	–34.9	–35.5	–36.379	–32.1[a]	–43.4	11.3	–38.00	16
–31.6	–32.7	–33.0	–31.8	–32.4	–31.9	–33.1	–34.2	–32.1	–30.6	–32.679	–28.0	–36.8	8.8	–35.94	17
–26.6	–30.6	–32.3	–29.6	–28.7	–28.2	–28.9	–24.6	–27.9	–26.6	–28.796	–22.8	–33.3	10.5	–33.78	18
–24.6	–25.6	–28.0	–28.1	–28.8	–31.6	–31.8	–34.6	–35.5	–33.6	–27.038	–20.0	–35.6	15.6	–32.78	19
–21.7	–20.8	–19.6	–19.9	–16.4	–19.6	–14.8	–17.5	–15.1	–12.9	–24.329	–12.0	–36.0	24.0	–31.28	20
–12.7	–13.7	–16.8	–16.8	–18.1	–22.6	–18.8	–25.8	–27.1	–31.6	–14.375	**–7.0**	–31.6[a]	24.6	–25.78	21
–28.5	–32.6	–28.4	–32.6	–31.8	–32.7	–32.3	–30.5	–29.3	–29.1	–30.483	–24.0	–35.7	11.7	–34.72	22
–26.6	–28.6	–31.1	–30.3	–33.8	–32.1	–32.0	–34.7	–33.6	–35.8	–30.004	–25.0	–36.5	11.5	–34.44	23
–37.6	–38.4	–40.6	–38.6	–41.6	–39.8	–40.7	–44.3	–45.0	–45.6	–37.529	–24.6[a]	–46.5	21.9	–38.61	24
–37.2	–37.6	–39.1	–36.4	–40.1	–41.8	–37.1	–38.9	–43.1	–40.3	**–40.533**	–34.3	**–46.8**	12.5	**–40.28**	25
–24.7	–25.4	–26.8	–28.1	–28.4	–32.0	–30.3	–30.6	–31.6	–31.7	–32.304	–20.0	–42.9	22.9	–35.72	26
–29.1	–24.1	–27.6	–25.0	–29.7	–31.6	–32.1	–28.1	–32.6	–33.6	–30.292	–19.0	–34.5	15.5	–34.61	27
–24.1	–24.3	–25.9	–27.8	–30.2	–28.4	–28.1	–28.1	–30.1	–34.6	–30.175	–20.2	–39.8	19.6	–34.56	28
–29.0	–26.7	–26.6	–31.0	–30.5	–31.6	–30.6	–33.1	–32.1	–29.6	–29.567	–21.8	–37.5[a]	15.7	–34.22	29
–21.1	–13.1	–12.2	–10.6	–9.3	–8.6	–9.6	–14.2	–13.8	–10.6	–21.212	–8.0	–35.0	27.0	–29.56	30
–17.9	–19.6	–22.4	–27.9	–30.2	–29.6	–34.1	–32.1	–34.6	–35.6	–19.904	–10.0	–36.0	26.0	–28.83	31
–28.210	–28.616	–28.852	–29.074	–29.261	–30.139	–29.926	–30.919	–31.055	–31.133	–29.9352	–22.41	–38.06	15.64	-------	
–33.44	–33.67	–33.78	–33.94	–34.06	–34.50	–34.44	–34.94	–35.06	–35.06	–34.41	–30.23	–38.92	8.70	–34.41	

[a] From the observed hourly readings.

APRIL, 1882.

TABLE LII.—*Temperature of the air, April, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	−37.1	−35.6	−33.5	−36.2	−39.1	−38.6	−34.5	−37.0	−32.6	−32.4	−28.1	−25.5	−29.1	−28.2
2	−35.9	−38.5	−41.1	−38.3	−36.9	−33.4	−35.5	−35.7	−33.6	−32.8	−32.4	−27.8	−29.1	−29.1
3	−41.0	−40.3	−35.5	−33.1	−34.7	−34.5	−33.4	−33.0	−29.1	−25.5	−27.9	−25.9	−23.9	−25.9
4	−29.6	−33.5	−32.8	−34.5	−30.8	−32.4	−30.9	−28.6	−24.6	−23.9	−20.9	−22.6	−24.8	−23.1
5	−22.7	−22.5	−22.1	−21.8	−21.0	−19.6	−16.0	−17.6	−16.1	−15.3	−14.7	−15.5	−18.1	−18.1
6	−30.5	−35.6	−30.0	−27.9	−30.6	−30.5	−29.5	−26.8	−26.2	−24.4	−24.4	−22.0	−22.9	−24.1
7	−29.1	−30.3	−28.7	−28.5	−27.0	−25.5	−26.2	−23.6	−21.6	−20.1	−20.1	−19.2	−18.9	−19.1
8	−19.6	−18.8	−18.0	−19.1	−18.5	−13.4	−10.0	−10.9	−9.5	−8.5	−7.1	−6.4	−3.7	−1.1
9	7.0	6.2	7.2	4.7	4.4	3.2	2.7	2.1	1.5	1.3	3.3	4.4	4.5	1.6
10	−12.7	−16.0	−10.6	−11.2	−4.8	−14.0	−10.0	−12.5	−9.6	−9.1	−8.2	−9.1	−5.9	−7.0
11	2.6	5.9	3.2	3.3	4.9	5.8	6.5	8.5	7.6	7.9	9.9	8.6	9.6	8.9
12	−4.5	−3.6	−9.4	−7.0	−8.0	−9.6	−4.1	−0.5	−4.6	−3.2	−0.6	−1.8	0.4	−4.6
13	−2.1	−0.9	−0.7	−1.0	−0.1	1.3	1.5	1.5	2.9	4.3	1.1	1.2	4.3	1.8
14	−5.2	−6.0	−4.7	−6.4	−2.5	−4.0	−1.5	−2.8	−3.2	0.3	1.2	−0.4	2.2	2.3
15	−9.6	−4.5	−8.5	−3.2	−5.4	−3.8	−3.7	−2.4	−1.8	0.4	1.2	2.7	1.7	0.4
16	−4.1	−1.9	−4.8	0.0	9.6	11.1	5.0	3.6	9.5	11.2	10.9	13.2	13.4	13.3
17	−2.6	−10.4	−12.7	−8.1	−8.2	−8.0	−5.6	−4.9	−5.4	−3.1	−1.6	−2.9	−1.4	0.2
18	−1.1	−9.1	−7.1	−7.1	−8.5	−6.5	−7.6	−5.4	−7.6	−7.0	−5.4	−5.4	−4.3	−3.5
19	−10.6	−9.5	−9.1	−8.9	−9.0	−7.1	−7.5	−7.6	−6.4	−5.6	−6.8	−6.1	−7.3	−6.9
20	−11.8	−13.7	−14.3	−15.0	−12.6	−11.6	−9.7	−12.7	−11.1	−11.1	−8.8	−9.4	−8.6	−11.6
21	−25.1	−25.5	−25.9	−16.5	−16.0	−19.6	−18.1	−14.6	−16.6	−14.4	−14.6	−11.6	−13.6	−11.8
22	−6.6	−4.1	0.4	2.9	3.8	5.2	6.3	7.5	8.1	8.2	9.0	10.0	11.4	9.6
23	7.9	9.8	9.8	8.9	8.7	9.3	10.3	10.3	10.8	11.2	12.6	12.1	10.8	9.3
24	−4.3	−2.8	−2.0	−2.2	−0.6	.3	−2.8	−0.9	−1.6	2.2	3.3	4.2	2.9	3.3
25	7.6	7.4	9.2	5.8	4.9	4.8	5.0	5.7	5.6	6.9	6.3	6.4	6.6	6.7
26	−8.4	−9.0	−8.8	−9.4	−9.8	−8.6	−7.5	−5.6	−6.1	−1.1	−0.6	−1.6	0.4	0.4
27	−5.6	−9.5	−9.7	−11.4	−11.5	−9.1	−9.1	−6.5	−6.1	−7.6	−7.6	−5.6	−2.6	−4.7
28	−13.8	−13.6	−15.1	−15.2	−13.6	−12.1	−10.3	−11.1	−9.0	−8.8	−7.1	−6.4	−2.3	−2.3
29	−15.8	−15.6	−15.8	−11.9	−12.6	−14.1	−10.2	−9.8	−7.6	−6.1	−7.3	−5.5	−4.2	−3.3
30	−9.8	−9.6	−9.2	−8.8	−8.5	−7.9	−3.8	−3.5	−1.6	1.1	0.4	1.1	3.7	3.2
Means	−12.800	**−13.037**	−12.677	−11.903	−11.493	−10.763	−9.673	−9.163	−8.187	−6.833	−6.167	−5.560	−4.960	−5.447
Means in centigrade	−24.89	**−25.00**	−24.83	−24.39	−24.17	−23.78	−23.17	−22.89	−22.33	−21.56	−21.22	−20.89	−20.56	−20.78

APRIL, 1882.

TABLE LII.—*Temperature of the air, April, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
-25.0	-26.7	-31.6	-30.9	-29.7	-30.4	-33.9	-34.1	-35.3	-40.6	-32.738	-20.3	-40.6[a]	20.3	-35.94	1
-29.7	-30.0	-31.7	-32.0	-36.5	-37.6	-36.7	-40.3	-34.2	-40.6	**-34.558**	-24.0	-41.8	17.8	**-37.00**	2
-23.5	-26.0	-25.8	-25.9	-29.8	-31.5	-30.6	-27.6	-31.8	-30.8	-30.292	-21.0	**-42.1**	21.1	-34.61	3
-21.7	-25.5	-26.0	-24.7	-24.7	-24.6	-23.9	-24.1	-23.9	-23.8	-26.496	-20.9[a]	-37.9	17.0	-32.50	4
-15.2	-17.1	-19.7	-21.7	-23.2	-23.1	-22.7	-26.3	-22.6	-33.9	-20.275	-12.5	-33.9[a]	21.4	-29.06	5
-24.0	-23.0	-25.3	-25.8	-25.1	-25.9	-28.4	-26.4	-26.5	-27.7	-26.817	-19.0	-35.6[a]	16.6	-32.67	6
-16.1	-17.6	-16.5	-19.4	-18.7	-18.6	-18.6	-19.4	-19.8	-20.4	-21.792	-13.6	-31.9	18.3	-29.89	7
-0.3	-0.2	1.2	4.7	3.8	3.2	3.4	4.8	7.4	7.4	-5.383	9.5	-20.0	29.5	-20.78	8
2.1	0.9	0.2	0.2	-5.2	-3.5	-5.8	-8.6	-11.1	-13.1	0.425	11.0	-13.1[a]	24.1	-17.56	9
-6.0	-7.8	3.8	3.3	-0.3	3.0	0.4	1.7	-0.2	-0.2	-6.375	7.5	-16.0	23.5	-21.33	10
7.4	6.9	6.2	4.0	2.2	2.4	0.7	1.2	1.0	-1.8	5.142	13.5	-1.8[a]	15.3	-14.94	11
-1.1	0.4	-2.0	-4.4	-2.6	-2.1	-1.6	-3.7	-1.5	-1.6	-3.425	3.0	-9.6[a]	12.6	-19.67	12
2.8	0.4	-1.0	-1.5	-4.6	-1.8	-5.2	-8.8	-8.2	-8.1	-0.871	8.5	-8.8[a]	17.3	-18.28	13
0.3	3.4	-0.1	-0.3	-3.2	-2.3	-2.2	-3.5	-5.6	-5.7	-2.079	7.0	-10.4	17.4	-18.94	14
1.7	3.4	3.3	1.3	0.8	4.7	12.5	9.6	-1.7	2.7	0.075	**13.9**	-9.6[a]	23.5	-17.72	15
11.7	9.7	8.6	4.8	1.7	0.3	-2.6	-1.5	-4.6	-2.4	4.821	**13.9**[a]	-4.9	18.8	-15.11	16
1.6	0.0	0.8	1.7	2.1	-0.5	-5.8	-6.4	-7.4	-7.5	-4.004	5.0	-12.7[a]	17.7	-20.00	17
-3.8	-5.4	-3.5	-7.0	-8.6	-8.2	-9.7	-8.6	-9.8	-9.1	-7.050	0.0	-11.0[a]	11.0	-21.72	18
-6.5	-7.9	-7.9	-8.4	-13.6	-14.2	-13.1	-13.8	-13.7	-13.6	-9.212	-4.5	-14.2	9.7	-22.89	19
-12.6	-10.8	-11.8	-10.9	-14.4	-15.8	-18.5	-18.2	-21.0	-22.1	-13.254	-5.5	-22.6	17.1	-25.11	20
-10.5	-10.7	-10.9	-11.0	-9.1	-10.8	-8.5	-6.4	-4.2	-1.1	-13.629	-0.3	-25.9[a]	25.6	-25.33	21
10.6	9.6	9.7	10.0	9.6	9.4	9.2	9.0	7.2	4.8	6.700	12.5	-6.6[a]	19.1	-14.06	22
8.1	7.3	7.6	5.0	3.9	3.2	0.7	0.6	-2.6	-2.1	**7.229**	12.6[a]	-3.1	15.7	**-13.78**	23
6.1	5.3	5.5	5.5	5.6	5.3	5.4	6.3	6.9	7.2	2.421	8.5	-4.5	13.0	-16.44	24
4.3	3.2	1.6	-1.1	-1.6	-3.1	-3.4	-4.1	-7.1	-5.4	3.008	10.0	-7.1	17.1	-16.11	25
-0.6	-2.1	-3.6	-3.0	-2.0	-5.7	-8.9	-7.3	-9.9	-5.4	-5.175	2.0	-12.2	14.2	-20.67	26
-2.6	-3.6	-5.5	-7.9	-9.1	-8.0	-10.4	-10.7	-11.7	-13.8	-7.912	-1.4	-13.8	12.4	-22.17	27
-2.9	-4.8	-5.2	-8.7	-7.6	-7.1	-8.6	-10.7	-10.8	-13.2	-9.179	-0.8	-15.8	15.0	-22.89	28
0.7	0.2	-1.9	-2.4	-2.6	-4.0	-7.0	-4.5	-7.4	-8.0	-7.362	2.4	-16.3	18.7	-21.89	29
2.6	3.3	7.7	5.9	5.7	5.9	5.0	3.7	4.8	5.0	-0.150	9.3	-11.3	20.6	-17.89	30
-4.737	-5.510	-5.793	-6.687	-7.893	-8.047	-8.960	-9.270	-10.177	-10.830	-8.60664	0.21	-17.84	18.05		
-20.39	-20.83	-21.00	-21.50	-22.17	-22.22	-22.78	-22.94	-23.44	-23.78	-22.56	-17.66	-27.69	10.03	-22.56	

[a] From the observed hourly readings.

MAY, 1882.

TABLE LIII.—*Temperature of the air, May, 1882.*

Washington mean time. Reduced to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	1.8	4.6	4.4	3.7	4.4	6.7	6.5	7.2	8.6	8.8	8.4	10.4	10.6	14.6
2	2.0	1.5	7.4	8.6	6.8	8.4	10.2	14.9	14.7	14.3	16.2	15.8	17.2	18.4
3	15.5	16.4	16.3	14.6	21.4	24.0	26.2	26.4	26.7	26.3	26.4	26.9	27.4	28.2
4	16.5	17.8	16.9	16.4	17.5	17.0	20.0	17.9	20.4	18.2	21.3	18.6	20.3	20.3
5	6.4	6.7	6.9	5.0	6.6	8.1	8.2	7.4	8.7	10.4	12.3	14.8	16.5	14.6
6	7.9	8.4	8.0	5.2	6.4	8.0	12.1	12.3	12.4	14.9	18.2	19.7	18.2	20.3
7	12.9	12.9	14.4	13.9	17.2	16.9	17.4	17.2	18.3	19.3	23.2	21.4	23.2	22.7
8	11.7	11.4	12.4	13.5	13.8	13.4	13.7	13.2	15.2	14.4	14.3	13.4	13.2	12.9
9	6.6	5.3	5.6	6.2	5.5	4.9	6.2	6.8	7.2	7.6	10.3	10.7	11.4	12.1
10	4.6	4.0	3.9	3.8	3.6	4.0	6.3	5.0	8.1	5.6	6.0	6.6	7.3	9.0
11	3.5	4.7	3.2	3.3	3.5	4.4	4.3	7.4	7.3	7.2	9.0	9.7	8.9	8.3
12	7.1	8.0	7.8	8.4	9.2	10.1	9.2	11.0	11.1	8.3	11.6	11.6	12.6	12.5
13	12.9	13.0	13.4	14.2	13.4	14.3	16.5	18.2	18.4	19.4	19.6	18.3	19.1	21.4
14	17.6	15.9	14.0	14.1	14.3	16.5	18.0	17.6	17.0	19.3	16.4	19.0	22.5	18.6
15	10.7	12.4	10.9	10.4	12.2	14.0	14.5	16.2	17.1	17.4	19.4	20.2	19.3	20.1
16	17.7	18.0	17.2	16.1	16.4	16.5	16.2	14.6	14.4	15.6	13.4	13.2	13.3	13.4
17	12.3	12.4	12.3	12.2	12.6	12.4	14.0	14.3	15.2	16.5	17.2	17.6	15.6	17.0
18	13.2	13.0	13.6	13.0	13.5	14.6	16.4	17.3	19.0	16.5	17.6	18.3	17.6	20.4
19	13.2	12.8	11.3	13.6	12.1	14.3	14.9	16.4	18.4	20.5	18.4	23.8	19.9	21.0
20	19.0	18.8	15.3	13.1	14.4	15.2	18.5	18.1	18.4	19.1	19.9	19.9	23.5	24.0
21	16.9	18.7	21.7	20.3	21.2	21.1	22.8	26.4	24.7	27.9	29.0	28.4	28.5	25.6
22	18.2	18.1	17.4	16.9	17.8	17.6	19.0	21.2	21.2	22.5	24.0	23.6	24.4	23.7
23	20.7	20.5	21.7	20.4	23.0	22.7	24.4	21.8	22.8	22.5	23.5	23.4	22.8	22.5
24	10.3	11.8	12.3	12.7	12.9	13.0	14.1	14.2	14.3	16.4	17.5	22.4	21.6	23.3
25	16.5	16.3	16.2	16.0	15.9	15.8	16.4	17.3	17.7	18.6	19.4	20.4	21.5	21.4
26	16.3	13.2	11.9	12.5	14.9	17.4	20.2	17.2	18.5	20.0	25.0	23.4	22.1	21.8
27	22.1	23.8	24.9	23.2	23.3	25.1	26.4	27.1	28.6	28.6	30.4	30.6	30.5	29.7
28	28.4	28.1	27.3	27.5	28.1	28.4	29.3	31.6	32.5	32.4	33.1	31.4	31.9	32.1
29	28.2	27.9	29.4	29.0	29.5	31.7	32.8	30.5	34.9	34.6	34.4	34.9	33.5	35.8
30	26.7	27.0	25.3	24.9	25.4	24.7	23.4	24.6	23.8	23.4	22.9	22.3	21.5	21.9
31	18.4	18.3	18.6	18.4	19.2	19.1	21.9	19.7	23.4	23.7	22.9	21.8	22.0	21.5
Means	14.058	14.248	14.255	13.906	14.710	15.494	16.774	17.129	18.032	18.394	19.394	19.758	19.932	20.294
Means in centigrade	−9.94	−9.89	−9.83	−10.06	−9.61	−9.17	−8.44	−8.28	−7.78	−7.56	−7.00	−6.78	−6.72	−6.50

MAY, 1882.

TABLE LIII.—*Temperature of the air, May*, 1882.

Washington mean time. Reduced to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
14.2	14.9	13.9	14.7	9.9	12.3	11.1	7.4	7.5	6.5	8.879	14.9[a]	1.8[a]	13.1	−11.83	1
16.6	17.2	17.7	18.1	18.4	18.1	15.0	16.1	16.2	18.9	13.696	18.9[a]	1.5[a]	17.4	−10.17	2
2[illegible].1	27.1	27.8	24.4	22.8	23.3	20.6	20.3	18.1	16.7	22.996	28.2[a]	13.4	14.8	− 5.00	3
20.9	18.3	17.1	15.8	12.8	11.2	11.9	8.7	8.8	6.4	16.292	21.3[a]	6.4[a]	14.9	− 8.72	4
16.0	15.4	14.0	14.5	15.5	14.4	12.9	10.0	10.2	10.9	11.142	16.5[a]	5.0[a]	11.5	−11.61	5
22.4	18.8	19.0	19.0	18.6	15.9	15.4	13.7	15.7	15.8	14.429	22.4[a]	5.2[a]	17.2	− 9.78	6
20.6	20.4	20.1	18.3	19.2	18.1	15.5	12.0	10.5	11.5	17.379	23.2[a]	10.5[a]	12.7	− 8.11	7
12.2	12.3	12.3	11.4	10.2	9.4	8.8	6.6	6.7	4.7	11.708	15.2[a]	4.1	11.1	−11.28	8
10.9	12.3	12.4	9.9	9.3	9.2	8.4	7.3	4.0	4.4	8.104	12.4[a]	4.0[a]	8.4	−13.28	9
10.8	9.3	10.5	9.8	9.3	5.4	6.7	7.2	8.8	4.2	**6.558**	10.8[a]	3.6[a]	7.2	**−14.06**	10
8.1	8.8	7.9	8.2	8.3	7.3	7.4	7.4	7.2	7.5	6.783	9.7[a]	**1.1**	8.6	−14.00	11
11.9	11.0	12.4	13.4	12.2	12.9	12.4	12.0	12.0	13.4	10.921	13.4[a]	7.1	6.3	−11.72	12
21.1	20.9	20.4	20.2	19.4	17.0	16.8	15.9	16.9	17.8	17.438	21.4[a]	12.0	9.4	− 8.11	13
20.9	20.6	18.0	20.7	19.4	18.1	15.4	13.1	13.3	12.4	17.196	22.5[a]	10.0	12.5	− 8.22	14
21.0	21.6	20.7	20.5	20.9	20.6	20.3	21.3	20.4	20.3	17.600	21.6[a]	10.1	11.5	− 8.00	15
13.4	13.2	12.9	13.7	12.8	12.9	13.2	12.4	12.3	12.6	14.392	18.0[a]	12.3[a]	5.7	− 9.78	16
18.5	18.4	18.3	17.4	17.2	16.4	15.4	15.6	15.8	15.2	15.408	18.5[a]	11.8	6.7	− 9.22	17
19.4	21.2	20.2	19.7	19.4	17.9	16.8	16.7	14.6	15.4	16.887	21.2[a]	12.9	8.3	− 8.39	18
22.2	22.2	21.1	21.1	19.3	21.0	19.6	18.9	17.7	18.9	18.025	23.8[a]	11.3[a]	12.5	− 7.78	19
21.4	22.2	21.6	21.4	21.5	21.2	19.8	19.3	19.1	16.6	19.221	24.0[a]	13.1[a]	10.9	− 7.11	20
28.0	29.1	25.1	24.1	24.4	25.1	22.4	18.4	17.4	16.7	23.496	29.1[a]	15.9	13.2	− 4.72	21
24.9	24.3	22.9	22.9	23.8	23.5	23.5	24.6	23.3	21.7	21.708	24.9[a]	15.9	9.0	− 5.72	22
23.0	22.6	19.9	19.2	19.3	18.2	18.0	17.4	15.7	10.4	20.683	24.4[a]	10.4[a]	14.0	− 6.28	23
23.2	22.6	21.1	19.7	21.9	19.8	19.3	17.7	18.3	17.9	17.429	23.3[a]	10.3[a]	13.0	− 8.11	24
22.4	20.7	21.5	22.2	18.1	17.3	15.5	15.6	16.8	16.0	18.146	22.4[a]	11.5	10.9	− 7.72	25
26.4	24.8	24.0	24.4	23.9	23.9	24.0	23.6	23.9	25.4	20.779	26.4[a]	11.9[a]	14.5	− 6.22	26
29.7	29.4	29.5	28.7	28.4	28.7	27.7	28.3	28.1	28.4	27.550	30.6[a]	21.2	9.4	− 2.44	27
33.4	31.4	31.7	31.6	31.8	31.4	30.9	30.4	29.9	27.4	30.500	33.4[a]	26.7	6.7	− 0.83	28
34.3	35.8	32.4	32.9	32.6	31.3	30.8	28.9	27.7	26.7	**31.688**	**35.8**[a]	26.6	9.2	− **0.17**	29
22.4	21.5	20.8	20.0	21.4	19.0	18.1	17.5	18.4	17.4	22.262	27.0[a]	16.5	10.5	− 5.39	30
21.1	21.8	20.6	19.4	19.6	19.4	20.0	19.1	19.5	17.4	20.283	23.7	17.4	6.3	− 6.50	31
20.626	20.323	19.606	19.268	18.761	18.071	17.213	16.271	15.961	15.339	17.4090	21.90	11.02	10.88		
− **6.33**	− 6.50	− 6.89	− 7.06	− 7.33	− 7.72	− 8.22	− 8.72	−8.89	−9.28	− 8.10	− [illegible].61	−11.65	6.05	− 8.10	

[a] From the observed hourly readings.

JUNE, 1882.

TABLE LIV.—*Temperature of the air, June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	15.9	16.4	16.2	16.7	16.4	17.0	18.3	17.9	18.7	23.4	23.4	24.8	25.0	24.6
2	16.9	17.0	16.4	16.3	16.7	17.3	18.6	17.6	19.4	21.5	22.3	21.5	20.0	20.5
3	13.2	14.0	13.8	13.4	13.8	14.3	16.2	18.6	19.9	20.5	20.6	20.8	20.4	23.0
4	21.4	21.5	21.8	23.5	23.9	23.4	25.4	25.6	25.4	26.9	27.5	27.5	27.6	28.5
5	22.6	21.4	23.2	22.9	23.1	24.3	23.9	23.9	24.6	25.5	24.5	25.7	26.3	27.0
6	16.4	17.6	18.4	18.3	18.4	17.9	19.3	20.2	20.9	21.9	22.8	22.5	22.5	23.9
7	20.0	19.4	19.9	19.4	20.9	20.0	21.2	21.3	21.6	27.7	27.9	29.6	27.6	30.5
8	26.2	26.0	26.4	26.6	24.2	24.9	27.7	27.5	25.9	28.5	27.2	31.9	32.4	31.9
9	27.9	27.9	27.7	27.3	26.6	27.3	28.8	30.8	33.5	31.6	35.6	34.4	35.4	34.4
10	29.7	31.5	32.0	30.4	31.2	30.9	31.5	34.9	36.1	35.4	34.2	34.0	36.4	33.6
11	31.2	31.0	30.4	30.5	31.4	31.3	30.9	33.0	33.9	34.4	33.5	36.4	36.0	36.3
12	32.3	31.8	32.4	32.5	33.6	33.2	33.0	33.4	33.6	34.2	34.5	35.6	35.7	34.9
13	32.4	32.9	32.8	32.6	33.4	33.3	33.7	33.6	35.3	35.8	36.5	38.5	37.8	36.2
14	35.4	35.2	34.8	35.2	35.4	35.0	35.2	34.9	36.2	35.9	35.4	37.0	37.4	35.8
15	33.4	33.2	33.2	33.0	32.8	33.7	33.8	34.4	36.5	35.8	35.1	34.8	33.6	33.4
16	34.2	34.0	34.1	35.4	35.4	35.2	35.6	36.9	35.9	34.8	33.6	33.5	34.7	34.8
17	32.4	32.3	32.2	32.2	31.4	31.5	30.9	29.4	30.4	30.3	31.2	30.5	30.9	29.8
18	27.2	26.7	27.3	27.3	27.2	27.4	28.4	28.2	28.2	28.6	28.8	29.4	29.6	29.5
19	29.1	28.4	29.4	29.5	28.4	29.6	30.9	31.7	31.5	33.9	36.9	36.8	37.0	38.5
20	32.9	32.8	32.9	33.2	33.6	33.4	34.0	34.3	34.4	36.0	34.6	36.5	35.2	34.7
21	33.9	34.5	33.7	33.6	34.0	34.6	35.4	35.8	36.4	37.9	37.4	37.4	37.7	37.7
22	39.9	41.2	40.9	41.0	41.9	41.4	44.4	41.3	39.5	38.3	39.1	39.4	41.5	41.8
23	43.4	42.2	42.0	42.3	43.5	40.3	40.5	39.7	39.6	38.4	36.0	36.0	35.6	37.0
24	37.5	37.6	38.4	38.6	39.5	39.3	38.8	37.2	37.4	39.4	39.0	42.0	38.4	40.7
25	38.0	35.9	39.8	40.0	39.0	37.3	38.6	41.4	37.6	40.1	38.9	39.4	40.4	41.3
26	36.9	35.6	37.0	37.6	37.0	37.2	39.2	37.6	38.1	38.9	41.9	40.6	38.9	45.4
27	42.0	40.2	37.6	38.4	39.6	41.0	41.3	41.6	41.9	41.0	43.4	43.5	44.3	41.0
28	44.0	44.5	44.0	43.6	45.2	46.8	47.2	49.1	50.2	48.8	48.4	48.5	48.0	47.5
29	41.4	41.3	42.1	41.0	40.3	36.9	41.0	41.4	43.3	44.6	42.9	43.0	42.5	43.9
30	45.2	45.0	47.4	46.4	46.7	47.6	46.8	47.7	46.6	49.6	50.6	50.8	51.2	52.3
Means	31.097	30.980	31.273	31.290	31.483	31.543	32.350	32.697	33.083	33.987	34.123	34.743	34.667	35.013
Means in centigrade	−0.50	−0.56	−0.39	−0.39	−0.28	−0.28	0.22	0.39	0.61	1.11	1.17	1.50	1.50	1.67

JUNE, 1882.

TABLE LIV.—*Temperature of the air, June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
25.3	25.0	26.6	24.2	22.9	21.4	20.5	22.5	20.4	19.6	20.963	28.5	15.9[a]	12.6	—6.11	1
20.5	20.1	19.4	19.1	18.2	19.8	18.7	15.6	16.4	14.3	**18.504**	26.0	13.2	12.8	**—7.50**	2
22.7	23.9	25.1	23.8	23.2	23.8	23.7	21.7	21.7	22.3	19.767	27.0	**12.7**	14.3	—6.78	3
29.4	28.8	28.2	27.6	26.8	27.2	25.5	25.3	26.2	24.6	25.812	29.4[a]	21.4[a]	8.0	—3.44	4
26.4	26.5	24.3	22.8	25.4	22.3	21.3	18.5	18.4	17.5	23.429	29.0	17.5[a]	11.5	—4.78	5
22.9	22.4	22.5	21.7	22.3	20.9	20.0	19.4	21.4	19.2	20.57.	24.8	16.4	8.4	—6.33	6
29.7	29.8	29.4	27.7	29.1	28.4	28.5	27.6	26.4	27.0	25.442	31.2	18.9	12.3	—3.67	7
32.1	31.4	31.4	30.1	29.9	30.2	28.2	28.7	28.2	27.6	28.546	35.3	24.2[a]	11.1	—1.94	8
34.4	34.6	33.2	34.0	33.8	31.4	31.8	34.3	33.4	32.1	31.754	37.0	25.5	11.5	—0.11	9
36.0	34.0	32.2	32.3	32.6	33.3	33.4	33.2	32.9	32.4	33.088	38.3	29.7[a]	8.6	0.61	10
35.9	35.1	34.7	36.2	32.6	33.8	33.8	33.4	32.6	32.9	33.383	39.0	29.7	9.3	0.78	11
33.4	34.0	34.9	34.2	34.0	33.4	33.2	32.4	33.5	32.4	30.579	36.8	31.8[a]	5.0	—0.78	12
37.0	35.2	36.7	35.3	35.5	35.4	35.4	34.9	35.9	35.4	35.062	39.2	32.3	6.9	1.72	13
30.5	36.6	35.5	36.4	35.3	34.5	34.4	34.3	34.2	33.9	35.433	39.1	32.3	6.8	1.89	14
33.9	34.0	34.4	33.7	33.4	33.2	33.0	32.9	33.6	33.6	33.850	38.0	32.7	5.3	1.00	15
35.6	35.5	36.4	34.5	34.0	33.8	33.4	33.4	33.0	32.4	34.588	38.2	32.3	5.9	1.44	16
28.6	28.8	29.1	28.3	28.4	27.7	27.5	27.0	27.4	27.4	29.817	33.8	26.6	7.2	—1.22	17
29.1	29.3	29.2	28.7	28.6	29.5	28.9	29.4	28.2	28.6	28.471	30.0	26.6	3.4	—1.94	18
36.9	35.7	34.7	35.2	34.6	34.3	34.2	33.4	33.4	33.0	33.208	40.0	28.1	11.9	0.67	19
35.2	34.0	34.3	35.4	34.9	35.4	34.2	34.2	34.4	33.8	34.346	37.0	32.5	4.5	1.28	20
36.9	37.4	38.1	37.6	37.2	37.7	38.1	38.4	39.3	39.4	36.671	42.0	33.2	8.8	2.61	21
41.9	39.4	38.4	37.9	38.1	39.2	44.4	44.3	43.2	43.9	40.929	46.2	36.8	9.4	4.94	22
37.4	38.4	36.3	35.2	37.4	38.4	37.9	38.2	38.0	38.5	38.842	45.8	34.7	11.1	3.78	23
42.1	40.2	39.2	40.4	39.4	40.3	39.5	38.3	38.3	39.7	39.217	45.0	37.1	7.9	4.00	24
41.3	40.6	39.3	39.3	38.9	38.4	37.9	36.4	36.0	36.4	38.842	43.8	35.7	8.1	3.78	25
44.1	40.0	40.2	37.8	39.4	41.4	41.2	40.2	38.4	38.4	39.292	47.3	35.5	11.8	4.06	26
43.9	43.7	41.5	44.6	45.7	42.2	44.2	44.6	45.3	43.2	42.321	49.8	36.1	13.7	5.72	27
47.5	49.4	48.2	47.2	47.1	45.6	42.9	44.4	43.3	41.6	46.375	51.2	41.6[a]	9.6	8.00	28
45.8	46.3	44.7	45.9	45.9	46.2	46.1	45.4	44.3	43.8	43.458	48.0	39.9	8.1	6.39	29
50.5	48.4	50.0	48.3	49.3	46.4	48.4	47.4	45.4	46.5	**48.104**	**53.0**	42.7	10.3	**8.94**	30
35.097	34.617	34.270	33.847	33.793	33.517	33.340	32.987	32.763	32.380	33.0221	38.32	29.12	9.20		
1.72	1.44	1.28	1.00	1.00	0.83	0.73	0.56	0.44	0.22	0.57	3.52	— 1.61	5.11	0.57	

[a] From the observed hourly readings.

JULY, 1882.

TABLE LV.—*Temperature of the air, July, 1882.*

Washington mean time. Reduced to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	47.2	46.2	46.7	46.6	47.7	47.9	48.5	47.5	44.7	39.2	39.2	38.9	41.3	40.6
2	36.4	36.1	35.2	35.9	35.5	35.5	35.0	35.4	35.6	35.4	35.5	36.3	36.4	36.4
3	35.4	35.4	35.2	35.5	35.2	35.3	35.4	36.4	35.6	35.6	36.4	35.6	42.4	38.4
4	34.4	34.4	34.4	34.5	34.9	34.7	32.7	33.3	33.4	35.6	35.5	38.6	38.5	36.8
5	34.0	33.4	34.1	34.2	34.0	35.9	36.2	37.4	36.6	37.6	39.6	37.5	39.4	40.7
6	36.7	36.6	38.7	38.9	38.4	39.9	43.0	38.4	43.4	39.4	40.3	38.6	41.3	42.9
7	40.4	41.3	44.4	40.9	40.4	41.6	41.4	40.4	46.1	44.7	45.4	44.5	44.2	41.5
8	41.5	41.5	42.0	41.3	41.5	40.9	39.4	38.3	39.2	38.3	38.3	39.3	42.3	43.3
9	38.4	37.4	36.2	37.4	36.0	36.4	36.8	35.4	34.4	33.4	32.7	33.2	33.9	34.3
10	32.1	32.2	32.4	32.4	32.4	33.0	37.2	35.6	35.8	35.5	36.9	39.7	36.6	35.4
11	33.4	33.4	32.7	32.2	31.9	32.2	33.2	32.4	33.5	32.2	32.5	32.9	33.4	33.2
12	31.2	30.0	31.0	30.5	30.8	32.2	30.4	31.1	31.4	33.4	32.6	35.3	34.8	36.4
13	35.4	34.4	35.3	36.1	36.4	35.0	34.7	34.4	35.2	35.2	36.3	36.6	36.3	38.4
14	38.3	36.4	37.1	37.5	35.4	36.3	35.5	35.9	36.6	36.5	37.0	36.4	36.4	36.3
15	39.3	40.0	39.7	40.3	38.8	39.1	38.7	37.9	37.7	38.1	38.8	38.4	40.6	40.4
16	39.4	39.9	39.4	40.4	40.9	42.2	42.1	41.4	42.1	42.8	42.4	44.0	42.5	38.9
17	36.0	35.6	35.9	35.4	35.9	36.2	35.4	37.0	38.1	37.9	38.2	37.4	37.6	37.9
18	33.2	33.3	34.3	33.3	33.5	33.5	38.6	37.4	36.7	39.3	43.1	39.8	38.7	40.2
19	34.0	34.9	35.0	34.9	34.6	34.7	34.5	35.2	34.8	36.1	36.4	39.7	38.4	40.7
20	33.6	33.9	33.9	33.4	33.6	34.1	33.9	34.2	42.1	42.1	41.8	42.1	39.1	36.2
21	33.6	33.4	33.2	33.1	33.2	33.5	34.5	33.6	34.9	36.2	36.6	37.6	37.2	37.3
22	35.0	34.3	34.6	34.6	34.8	35.6	35.2	36.1	36.2	37.5	38.1	38.7	37.4	36.9
23	34.9	34.2	34.4	33.9	33.5	33.7	33.8	33.8	34.0	34.7	35.4	34.3	35.1	34.7
24	34.8	35.6	35.2	34.9	35.5	35.2	35.1	37.3	38.5	37.3	39.0	39.3	39.1	37.5
25	34.6	34.9	35.9	35.9	35.6	36.4	36.6	36.9	36.8	37.4	37.0	40.1	39.2	38.8
26	38.6	38.9	37.9	39.5	38.2	38.0	38.7	40.3	39.1	41.2	41.4	41.3	42.1	40.9
27	36.5	36.8	36.5	38.4	37.5	37.2	37.2	37.5	37.7	37.9	36.4	35.0	35.4	35.6
28	37.4	36.4	36.3	36.3	36.3	35.5	36.2	36.2	37.1	36.4	36.7	36.4	38.1	39.4
29	33.9	34.2	34.1	34.3	34.5	35.9	33.9	34.4	35.9	35.4	35.1	34.5	34.6	34.3
30	35.0	34.4	35.2	35.3	35.4	35.1	34.6	35.0	35.4	36.5	34.2	34.4	34.9	35.2
31	35.2	33.7	34.0	34.7	34.5	35.0	34.5	35.4	34.7	36.5	34.6	33.9	34.5	35.6
Means	36.123	35.906	36.158	36.206	36.026	36.377	36.545	36.500	37.203	37.268	37.529	37.752	**38.119**	37.906
Means in centigrade	2.28	2.17	2.33	2.33	2.22	2.44	2.50	2.50	2.89	2.94	3.06	3.22	**3.39**	3.28

JULY, 1882.

TABLE LV.—*Temperature of the air, July, 1882.*

Washington mean time. Reduced to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
39.2	39.5	40.2	40.1	37.4	37.3	36.7	36.4	36.4	37.2	41.775	**50.3**	35.6	14.7	5.44	1
35.6	36.3	36.3	36.5	36.0	37.4	37.3	35.5	35.6	35.1	36.925	50.1	34.7	15.4	2.72	2
37.9	36.5	37.5	36.7	35.8	35.2	34.8	34.5	34.0	33.5	36.008	40.0	33.4	6.6	2.22	3
38.3	38.6	38.9	37.3	35.8	35.3	37.2	33.9	34.8	34.0	35.658	41.9	32.7[a]	9.2	2.06	4
40.2	38.6	37.6	37.3	41.9	38.6	36.8	37.2	37.0	36.1	37.162	45.1	33.4[a]	11.7	2.89	5
42.1	45.0	45.5	47.0	45.9	42.3	41.5	45.0	41.3	39.8	41.329	48.8	36.6	12.2	5.17	6
41.6	42.6	42.4	42.4	43.0	42.4	39.9	39.9	41.6	40.6	**42.233**	48.0	39.4	8.6	**5.67**	7
39.6	44.4	42.3	42.6	43.2	43.0	40.8	38.8	38.7	37.9	40.767	47.9	37.9[a]	10.0	4.89	8
35.9	36.7	36.8	39.0	37.2	36.8	33.7	33.4	33.5	33.2	35.504	42.0	32.4	9.6	1.94	9
36.9	36.6	35.2	35.4	35.5	34.4	33.9	34.2	33.9	33.7	34.871	41.2	32.2	9.0	1.61	10
32.2	33.0	32.4	32.5	32.4	33.2	33.2	33.4	32.5	31.2	**32.712**	41.2	31.2[a]	10.0	**0.39**	11
36.6	33.6	33.2	33.6	33.2	31.5	31.1	34.5	35.2	35.2	32.867	37.5	**30.0**[a]	7.5	0.50	12
41.4	41.3	41.2	40.9	39.4	38.4	36.9	37.4	37.9	37.6	37.171	43.0	34.2	8.8	2.89	13
36.0	35.9	34.9	34.9	34.4	35.1	35.7	36.7	36.7	36.6	36.188	39.3	34.2	5.1	2.33	14
41.7	40.3	41.6	42.2	41.8	41.3	41.4	40.6	39.7	39.9	39.929	43.5	36.5	7.0	4.39	15
36.4	36.4	35.2	36.4	37.4	40.4	37.4	36.4	36.0	34.9	39.388	45.4	34.7	10.7	4.11	16
36.6	36.2	35.2	35.2	34.5	33.6	33.2	33.2	33.4	33.2	35.783	40.2	32.8	7.4	2.11	17
39.6	39.0	38.8	36.9	37.7	37.4	36.6	37.5	37.5	35.3	37.133	44.1	32.8	11.3	2.83	18
39.4	36.7	37.4	37.7	35.3	34.4	33.6	34.2	34.3	33.5	35.850	42.2	33.3	8.9	2.17	19
37.1	36.2	35.4	34.9	34.5	33.9	34.4	34.1	33.6	34.3	35.933	44.9	33.2	11.7	2.17	20
37.5	35.9	35.6	35.7	36.4	36.2	36.3	35.3	35.5	35.2	35.312	39.1	33.0	6.1	1.83	21
38.2	37.0	36.3	36.2	35.6	35.6	35.3	34.9	35.2	34.9	36.008	40.8	34.0	6.8	2.22	22
35.4	35.0	35.4	36.5	36.9	36.6	35.4	35.3	35.0	35.2	34.879	38.5	33.3	5.2	1.61	23
38.4	38.5	38.3	37.1	35.7	35.9	35.7	35.4	35.5	34.6	36.642	41.3	34.5	6.8	2.56	24
38.7	36.5	37.0	37.7	37.9	36.6	36.5	36.4	38.4	38.4	37.092	41.0	34.6[a]	6.4	2.83	25
42.9	41.1	40.4	37.4	39.5	39.4	38.1	36.4	36.5	35.9	39.321	45.2	35.7	9.5	4.06	26
35.7	35.4	36.4	39.4	38.9	38.1	39.2	38.4	37.9	36.7	37.154	40.5	34.7	5.8	2.89	27
36.8	36.8	37.4	37.4	35.6	35.6	35.0	34.6	34.4	34.4	36.362	41.0	34.2	6.8	2.44	28
36.4	35.8	35.9	34.4	34.4	33.6	34.0	33.4	33.7	33.9	34.600	37.8	33.2	4.6	1.44	29
35.4	35.5	35.7	35.5	35.0	34.9	35.0	35.1	36.2	35.8	35.196	38.3	33.5	4.8	1.78	30
39.1	35.0	35.4	36.9	34.3	33.7	33.2	32.5	32.5	33.4	34.700	40.8	[illegible]	8.5	1.50	31
38.026	37.610	37.477	37.539	37.177	36.713	36.123	35.951	35.948	**35.523**	36.8533	42.61	34.01	8.60	....	
3.33	3.11	3.06	3.06	2.89	2.61	2.28	2.22	2.22	**1.94**	2.70	5.90	1.12	4.78	2.70	

[a] From the observed hourly readings.

AUGUST, 1882.

TABLE LVI.—*Temperature of the air, August,* 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	35.0	35.0	34.9	33.1	32.9	34.2	36.8	35.4	40.0	34.6	35.9	36.4	36.5	37.3
2	35.7	34.2	34.3	34.1	32.4	34.3	34.7	35.5	35.4	35.4	35.9	36.0	35.6	36.0
3	35.7	35.3	36.2	35.9	35.1	35.6	35.1	34.2	34.6	35.4	36.4	36.5	35.9	34.3
4	33.2	33.8	34.2	32.9	33.6	33.4	33.4	34.3	37.5	36.1	35.7	36.2	37.3	37.2
5	38.6	37.1	39.6	40.3	36.2	37.7	36.9	37.6	39.3	39.5	39.3	38.9	40.7	37.5
6	39.5	40.2	38.6	37.7	38.4	37.6	38.2	37.4	37.3	38.3	37.5	39.3	37.5	34.9
7	33.8	34.1	34.0	33.6	33.7	33.8	34.0	33.6	34.2	34.8	34.8	35.5	34.5	34.8
8	32.0	33.0	33.0	32.5	32.6	33.5	33.1	34.0	33.5	34.0	35.7	34.6	34.1	34.7
9	39.2	38.8	38.6	39.8	38.9	38.3	38.9	40.0	40.2	40.6	41.4	40.4	39.2	36.4
10	34.2	32.2	32.4	32.4	32.7	32.0	32.4	32.4	31.9	31.4	32.4	32.7	33.4	33.3
11	35.0	35.5	35.4	37.4	40.8	42.0	38.9	38.5	43.1	42.5	43.7	44.6	41.6	39.6
12	37.8	36.9	37.8	37.7	38.1	39.2	38.8	38.5	40.7	41.2	40.9	41.5	41.9	41.4
13	35.6	35.9	37.4	36.4	36.4	37.4	37.0	38.2	38.4	39.2	39.8	40.9	40.7	42.0
14	39.1	39.3	38.9	39.2	38.8	39.8	40.5	40.9	41.5	42.0	41.9	42.0	41.7	41.6
15	37.0	37.7	37.6	37.3	37.6	37.3	36.7	36.9	38.8	37.6	37.5	36.7	37.8	37.6
16	36.2	35.9	36.5	36.4	39.1	37.5	39.9	38.4	38.0	38.8	43.3	39.9	39.4	40.0
17	35.7	35.7	38.0	36.0	36.9	37.0	38.1	37.7	38.3	37.1	36.0	35.0	36.5	35.5
18	34.8	34.5	33.8	33.9	34.4	34.3	34.9	34.8	34.4	34.6	34.8	36.2	35.2	35.7
19	37.1	40.4	40.0	39.6	40.8	40.5	40.8	41.5	41.3	40.5	42.9	42.7	42.6	44.2
20	39.6	40.7	39.3	39.2	37.2	35.7	36.6	37.3	37.6	37.6	38.4	38.2	37.7	39.7
21	37.6	38.1	38.3	37.8	38.6	39.6	39.7	41.5	41.1	39.3	44.7	43.6	43.4	40.6
22	34.4	33.8	33.6	36.4	37.6	36.4	38.4	38.6	35.6	38.1	37.8	36.4	35.0	37.7
23	32.4	33.9	33.2	33.2	33.2	34.2	35.5	34.5	35.6	34.6	34.4	34.7	34.4	34.4
24	34.3	33.5	33.5	34.3	35.7	35.5	35.7	36.0	35.1	34.4	36.9	36.4	35.2	34.5
25	34.2	34.1	33.9	33.8	34.4	35.0	34.2	34.0	33.9	33.5	31.9	33.9	33.9	33.5
26	29.7	30.0	30.1	31.9	32.5	31.4	32.1	32.3	30.7	31.4	31.5	32.2	30.7	32.0
27	27.5	27.5	28.2	28.2	28.0	27.9	29.1	28.8	28.6	29.2	29.7	30.1	29.7	29.7
28	29.2	28.1	28.3	28.0	30.3	28.1	30.3	29.4	32.3	28.4	30.1	29.8	30.2	32.3
29	27.9	28.0	27.9	28.4	29.4	31.2	31.4	31.5	31.0	31.0	31.0	30.8	31.3	30.7
30	28.4	28.0	28.9	28.4	28.4	28.5	27.4	27.7	27.6	27.6	28.3	28.5	28.5	29.4
31	25.8	26.1	26.0	26.4	26.3	26.2	26.6	26.5	26.9	26.9	26.7	26.9	26.5	26.2
Means	34.394	34.429	34.594	34.587	34.871	35.002	35.358	35.416	35.948	35.665	36.361	**36.371**	36.084	35.958
Means in centigrade	1.33	1.33	1.44	1.44	1.61	1.67	1.89	1.89	2.22	2.06	2.42	**2.43**	2.28	2.22

AUGUST, 1882.

TABLE LVI.—*Temperature of the air, August,* 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
38.5	41.7	40.6	39.0	36.8	37.0	36.7	36.4	35.9	35.9	36.521	43.5	32.2	11.3	2.50	1
35.4	35.0	36.3	36.5	36.9	36.9	36.3	36.8	36.2	36.4	35.508	39.9	33.2	6.7	1.94	2
34.9	35.3	36.0	36.1	34.5	35.1	34.4	34.2	33.8	33.7	35.175	38.1	33.4	4.7	1.78	3
36.4	35.7	35.7	35.0	35.7	35.3	35.2	36.0	35.7	36.8	35.262	42.0	32.7	9.3	1.83	4
38.0	39.6	41.4	41.2	40.1	39.5	39.1	39.8	39.8	38.4	39.004	44.9	36.2[a]	8.7	3.89	5
36.5	36.2	34.7	35.3	35.0	35.5	35.7	35.3	35.1	34.6	36.929	42.1	34.2	7.9	2.72	6
35.6	34.5	34.6	34.3	33.9	34.3	33.2	33.3	33.2	32.9	34.125	37.0	32.7	4.3	1.17	7
34.9	36.3	37.3	37.2	39.3	38.2	39.3	39.4	38.8	39.5	35.438	41.1	32.0	9.1	1.89	8
36.4	38.4	36.9	37.2	35.5	36.8	34.5	34.0	33.2	34.0	37.817	42.5	32.7	9.8	3.22	9
33.3	33.2	33.5	33.4	33.5	35.2	34.4	34.6	34.4	34.9	33.175	36.6	31.1	5.5	0.67	10
41.8	39.4	41.4	40.2	40.6	42.6	39.8	39.7	38.4	36.4	39.954	46.0	34.0	12.0	4.44	11
41.4	41.5	42.0	40.9	38.5	38.9	36.7	37.4	37.2	36.0	39.288	42.2	35.7	6.5	4.06	12
41.2	42.0	40.6	40.0	41.3	41.2	40.8	38.5	39.2	39.3	39.058	43.6	34.6	9.0	3.94	13
41.8	41.4	40.9	39.7	41.3	40.9	40.1	40.3	38.6	37.9	40.421	44.4	37.7	6.7	4.67	14
37.6	38.6	37.6	37.6	39.4	40.3	39.9	36.5	38.0	36.7	37.762	43.0	36.3	6.7	3.22	15
37.2	39.0	41.3	38.8	39.6	37.0	38.5	38.4	35.3	36.5	38.371	44.5	35.3	9.2	3.56	16
34.9	35.4	35.9	37.2	35.8	35.8	35.8	34.5	34.8	34.8	36.183	40.5	34.5[a]	6.0	2.33	17
37.5	36.6	36.4	37.7	36.8	36.6	36.0	35.4	34.9	36.1	35.429	39.7	33.4	6.3	1.89	18
43.5	43.7	43.3	43.2	42.0	38.0	41.2	41.1	40.0	40.8	**41.321**	46.8	36.1	10.7	**5.17**	19
39.6	37.9	38.0	38.4	37.9	38.4	37.3	38.7	37.4	37.6	38.167	43.0	35.2	7.8	3.44	20
37.2	36.3	35.8	36.4	37.0	35.4	35.5	35.5	34.2	35.3	38.438	**47.8**	33.7	14.1	3.56	21
37.5	37.2	37.0	37.5	34.2	34.1	35.0	34.9	32.2	32.9	35.929	40.5	32.0	8.5	2.17	22
34.6	34.5	34.4	34.4	34.4	35.4	34.4	34.9	34.3	34.4	34.329	37.1	32.2	4.9	1.28	23
33.3	33.4	33.7	32.4	34.6	35.3	34.9	34.4	33.8	34.3	34.629	38.0	32.2	5.8	1.44	24
33.4	33.7	34.0	33.4	34.3	32.3	31.5	31.1	29.6	29.2	33.196	37.5	28.5	9.0	0.67	25
31.9	32.9	31.9	30.9	29.3	28.5	28.3	27.9	26.8	27.6	30.604	34.8	26.7	8.1	—0.78	26
29.6	29.7	29.5	29.4	29.4	29.2	28.8	28.4	28.4	28.5	28.879	31.8	27.3	4.5	—1.72	27
30.6	29.8	30.7	30.4	30.9	29.9	30.3	30.1	29.6	28.9	29.833	34.0	27.8	6.2	—1.22	28
31.2	31.9	31.7	32.1	31.9	31.5	31.5	29.7	28.7	28.2	30.412	32.8	27.5	5.3	—0.89	29
27.5	26.9	27.7	28.2	26.4	26.2	26.1	25.6	25.7	25.9	27.575	29.4[a]	25.6	3.8	—2.44	30
26.1	26.0	25.4	25.2	24.8	24.1	24.0	23.4	23.4	22.8	**25.633**	26.9[a]	**22.8**	4.1	**—3.56**	31
35.784	35.861	36.006	35.781	35.535	35.335	35.006	34.716	**34.084**	34.103	35.302	39.742	32.242	7.50	--------	
2.11	2.17	2.22	2.11	1.94	1.83	1.67	1.50	**1.16**	1.17	1.83	4.30	0.16	4.16	1.83	

[a] From the observed hourly readings.

SEPTEMBER, 1882.

TABLE LVII.—*Temperature of the air, September, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	22.6	22.3	22.2	22.7	21.9	22.4	22.4	22.3	23.9	24.0	23.9	24.6	24.5	23.6
2	20.4	20.5	21.0	21.5	22.2	22.6	23.2	23.6	24.2	24.6	25.0	24.7	25.2	25.2
3	25.0	24.9	24.9	25.0	25.2	25.8	25.8	26.2	26.7	26.5	26.6	26.6	26.7	26.4
4	24.6	24.9	25.0	24.5	23.9	24.2	24.1	25.2	24.6	25.4	26.5	26.4	26.5	25.7
5	25.2	25.4	25.4	25.4	24.5	24.9	25.3	25.2	25.5	27.4	25.6	24.5	23.7	24.5
6	21.6	21.7	22.9	23.4	23.4	23.6	23.2	24.3	23.9	24.1	23.6	24.2	23.8	23.4
7	21.4	21.7	22.4	22.8	22.7	21.4	22.3	21.6	21.1	20.8	20.5	20.9	20.5	20.0
8	19.3	18.5	18.4	18.5	18.5	19.3	19.2	19.4	19.2	19.5	19.2	19.6	20.1	20.3
9	16.5	17.2	16.5	14.7	15.4	14.9	15.6	16.4	16.5	16.9	16.8	19.0	17.4	17.9
10	14.7	17.4	19.2	19.2	18.9	19.6	19.7	19.7	23.4	22.9	21.2	20.5	21.0	20.3
11	24.5	23.3	23.8	22.0	22.2	24.3	20.6	18.9	21.7	22.2	22.4	22.7	22.5	22.7
12	15.7	16.0	14.8	14.2	15.0	14.6	15.9	16.2	18.1	19.9	21.7	19.0	18.3	18.7
13	20.5	21.0	19.2	19.6	20.2	20.6	21.1	21.1	21.6	21.5	21.8	21.3	20.6	20.6
14	19.4	20.6	20.4	20.0	19.2	19.0	19.0	18.7	16.1	16.1	16.1	16.2	16.5	16.5
15	12.7	13.6	13.4	13.2	12.5	13.4	13.4	12.7	15.9	16.8	19.2	20.4	20.6	19.8
16	11.5	12.1	12.4	12.8	12.2	11.5	13.5	15.0	16.2	16.9	17.2	19.0	20.5	20.6
17	21.2	21.5	21.3	22.4	21.4	21.2	21.7	21.3	21.4	21.6	21.9	21.5	21.8	22.2
18	20.1	19.7	19.2	18.9	15.6	14.6	14.9	14.7	15.3	15.6	16.2	16.0	17.0	16.6
19	8.4	7.1	5.3	5.2	5.0	5.2	4.4	5.3	5.3	6.3	6.6	7.5	7.5	8.1
20	9.1	8.9	8.8	6.7	5.1	6.9	7.9	6.7	5.5	7.6	6.9	8.9	9.8	9.2
21	2.9	2.9	6.4	6.6	7.4	8.4	8.7	9.6	9.6	10.0	11.3	11.3	11.4	11.9
22	14.8	16.4	19.9	19.5	19.8	19.4	19.4	19.4	18.2	19.4	20.4	20.6	20.6	20.3
23	18.3	19.4	20.0	19.8	19.7	19.7	20.7	19.2	21.3	21.3	21.5	23.0	22.5	22.6
24	19.2	19.0	18.9	18.8	18.7	18.7	18.2	17.9	18.1	20.7	20.1	21.0	18.1	17.9
25	10.2	9.9	9.4	8.5	9.5	9.4	9.0	9.9	9.9	10.0	12.2	12.8	14.5	13.6
26	11.6	10.0	10.6	11.0	7.4	7.3	8.9	9.9	13.6	13.2	13.8	9.8	9.6	12.4
27	18.9	15.7	17.4	19.8	19.9	19.9	19.5	20.1	22.9	22.8	24.0	23.2	20.5	22.8
28	19.9	21.4	22.6	22.9	24.1	23.5	22.6	22.3	22.1	20.8	22.2	23.9	22.0	23.0
29	23.1	21.8	23.2	22.4	21.2	18.9	19.2	19.2	19.4	17.4	13.5	13.5	17.2	14.6
30	11.5	9.2	8.9	12.4	11.9	12.4	12.1	11.6	12.4	12.0	13.2	14.4	14.4	16.2
Means	17.493	17.433	17.793	17.813	17.487	17.587	17.717	17.787	18.453	18.807	19.037	19.233	19.177	19.[illegible]53
Means in centigrade.	− 8.06	− 8.11	− 7.89	− 7.89	− 8.06	− 8.00	− 7.94	− 7.89	− 7.56	− 7.33	− 7.22	− 7.10	− 7.12	− 7.08

SEPTEMBER, 1882.

TABLE LVII.—*Temperature of the air, September, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
24.2	23.4	25.4	24.3	22.5	21.9	21.4	21.4	21.4	20.4	22.900	25.4[a]	20.4	5.0	− 5.06	1
25.1	24.8	24.6	24.6	24.7	24.8	24.6	24.6	24.9	24.8	23.808	25.2[a]	19.9	5.3	− 4.56	2
26.8	26.8	27.1	26.7	26.5	26.2	25.8	25.8	25.0	24.8	**25.992**	27.1[a]	24.7	2.4	− **3.33**	3
24.4	24.9	24.5	24.9	24.8	24.6	24.7	24.7	24.9	25.3	24.967	26.5[a]	23.8	2.7	− 3.89	4
24.4	23.9	23.5	22.6	21.4	21.0	20.4	20.2	20.3	22.5	23.862	**27.4**[a]	19.9	7.5	− 4.50	5
23.6	23.6	23.9	23.5	23.2	23.2	23.2	23.5	23.5	22.6	23.371	24.3[a]	21.1	3.2	− 4.78	6
20.0	19.5	20.0	20.2	20.3	19.5	19.4	19.3	19.4	19.0	20.696	22.8[a]	18.9	3.9	− 6.28	7
20.1	20.1	19.8	19.7	19.6	19.5	19.4	18.4	16.8	17.1	19.146	20.3[a]	16.8[a]	3.5	− 7.17	8
17.9	18.4	19.0	17.0	15.3	13.6	16.1	15.5	14.6	13.9	16.375	19.0[a]	13.6[a]	5.4	− 8.67	9
19.4	19.5	19.7	18.5	17.8	19.1	23.0	24.4	24.2	26.1	20.392	26.1[a]	13.4	12.7	− 6.44	10
23.6	22.0	20.2	17.8	16.9	16.5	15.4	15.5	16.4	14.9	20.542	24.5[a]	14.8	9.7	− 6.39	11
18.9	19.4	18.8	19.4	19.8	19.8	20.3	20.3	20.3	20.3	18.142	21.7[a]	13.2	7.5	− 7.72	12
20.4	20.2	20.1	20.0	19.9	19.6	19.5	19.4	19.4	19.5	20.362	21.8[a]	19.2[a]	2.6	− 6.44	13
16.4	14.9	13.4	12.8	12.7	12.7	11.8	12.5	12.2	13.2	16.100	21.5	11.8	9.7	− 8.83	14
18.7	16.8	14.9	13.4	13.4	13.6	13.9	12.6	12.8	11.4	14.921	20.9	11.4[a]	9.5	− 9.50	15
21.4	21.1	20.5	20.4	20.4	20.3	20.4	20.4	20.4	20.4	17.379	23.5	11.0	12.5	− 8.11	16
21.9	21.5	20.9	20.7	20.5	20.1	20.0	20.0	20.0	20.0	21.167	25.1	19.8	5.3	− 6.00	17
16.6	16.3	15.4	14.6	14.0	13.4	13.4	10.6	8.9	9.2	15.283	22.0	7.9	14.1	− 9.28	18
8.2	7.9	5.1	4.6	3.5	3.9	6.4	7.2	7.2	7.9	**6.212**	12.0	3.5[a]	8.5	−**14.33**	19
8.2	5.3	5.5	4.6	4.4	3.2	4.6	5.6	2.6	2.2	6.425	13.0	1.4	11.6	− 14.22	20
12.5	12.0	11.6	11.8	12.4	13.4	14.5	15.4	14.4	14.4	10.450	16.0	**0.7**	15.3	− 11.94	21
20.4	19.3	18.7	18.6	20.4	19.3	19.4	19.4	18.6	18.5	19.196	23.0	12.9	10.1	− 7.11	22
22.5	22.8	22.2	22.6	24.2	24.3	24.3	22.5	21.4	21.6	21.554	25.0	17.9	7.1	− 5.78	23
18.6	16.8	15.6	14.2	13.6	12.5	10.9	10.6	10.5	11.5	16.671	21.0	10.0	11.0	− 8.50	24
12.9	13.0	12.2	11.5	11.4	10.4	11.4	10.7	11.4	11.4	11.046	14.8	8.1	6.7	− 11.67	25
9.3	10.4	11.0	11.9	13.6	15.6	17.0	16.2	16.2	17.4	11.988	18.0	6.6	11.4	− 11.11	26
24.4	24.2	23.9	24.4	25.2	25.1	21.6	22.3	23.2	21.7	21.808	26.0	13.9	12.1	− 5.67	27
24.0	23.6	24.2	22.3	24.0	23.9	24.5	24.5	23.7	24.6	23.025	26.0	19.9[a]	6.1	− 5.00	28
13.9	10.7	13.6	9.5	10.2	10.3	10.5	11.5	12.4	11.2	15.766	25.0	9.5[a]	15.5	− 9.00	29
13.6	13.5	15.2	13.8	13.3	13.6	13.8	14.4	17.4	12.4	13.067	20.0	8.6	11.4	− 10.50	30
19.077	18.553	18.350	17.697	17.663	17.497	17.717	17.647	17.480	**17.340**	18.0871	21.83	13.82	8.01	....	
− 7.17	− 7.24	− 7.56	− 7.94	− 7.94	− 8.06	− 7.94	−8.00	−8.06	− **8.17**	− 7.73	− 5.47	−10.10	4.44	− 7.73	

[a] From the observed hourly readings.

OCTOBER, 1882.

TABLE LVIII.—*Temperature of the air, October, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	11.4	11.2	10.8	10.9	10.3	9.9	11.1	11.4	11.4	11.2	10.8	10.2	10.1	8.2
2	7.5	5.5	5.6	5.9	7.2	7.9	9.4	9.4	9.9	10.2	9.8	9.7	9.6	9.4
3	9.6	10.5	10.3	10.4	10.4	10.4	10.6	9.9	9.8	10.1	8.6	8.8	8.8	9.1
4	2.6	2.4	2.0	0.4	2.4	2.5	3.0	2.6	2.4	3.9	3.9	4.3	1.4	0.8
5	− 4.2	− 4.6	− 5.1	− 5.8	− 7.6	− 6.8	− 9.5	− 6.5	− 6.5	− 7.0	− 5.9	− 5.4	− 7.6	− 8.9
6	− 6.1	− 9.4	− 9.5	− 9.3	− 9.4	− 9.4	− 7.5	− 8.0	− 9.1	− 4.6	− 5.1	− 6.5	− 5.7	− 5.6
7	− 6.4	− 6.3	− 6.3	− 6.6	− 5.4	− 5.7	− 7.5	− 6.4	− 7.6	− 8.4	− 8.1	− 6.7	− 8.5	− 9.3
8	− 8.8	− 8.4	− 9.0	− 8.3	− 8.2	− 8.8	− 8.6	− 8.1	− 8.0	− 7.9	− 8.8	− 8.4	− 8.7	−10.7
9	−11.4	−11.2	−10.4	− 9.8	− 9.2	−10.6	−10.7	− 9.4	−10.1	− 9.4	− 9.2	− 9.2	−10.1	− 9.8
10	− 7.6	− 9.4	− 7.4	− 6.6	− 6.5	− 6.1	− 4.6	− 3.6	− 2.9	− 2.4	− 1.6	− 0.6	0.7	0.0
11	5.2	3.4	2.2	0.6	1.8	− 0.8	1.2	2.9	− 0.6	− 0.4	− 1.2	− 0.6	1.5	2.5
12	− 3.2	− 3.6	− 5.2	− 4.6	− 4.6	− 3.9	− 5.0	− 3.6	− 3.9	− 4.2	− 2.6	− 3.6	− 3.6	− 5.7
13	− 0.6	− 0.6	− 0.2	− 0.6	− 1.6	− 2.4	− 2.4	− 1.0	− 1.1	− 0.3	0.0	1.1	1.8	2.5
14	1.0	1.3	1.4	0.7	0.6	0.8	0.7	1.2	1.4	1.2	0.9	1.0	0.2	0.2
15	0.4	0.4	0.4	0.5	− 0.2	0.0	0.0	− 0.2	− 0.2	− 0.7	− 0.8	− 0.4	− 0.8	− 0.6
16	− 3.1	− 3.6	− 3.6	− 3.7	− 4.5	− 6.6	− 7.5	− 9.7	− 9.5	− 8.7	− 9.6	− 9.4	−11.5	− 9.0
17	−11.0	−10.6	−11.1	−12.1	−13.7	−14.1	−14.6	−15.4	−15.7	−16.0	−17.6	−16.2	−17.4	−17.1
18	− 8.6	− 9.7	− 8.0	− 6.8	− 6.6	− 8.6	− 9.6	−11.4	−14.3	−15.8	−14.6	−15.	−15.6	−15.6
19	−13.6	−13.1	−13.1	−14.6	−15.5	−14.6	−15.1	−15.6	−17.5	−15.8	−18.4	−17.6	−18.7	−20.4
20	−20.1	−16.6	−16.6	−14.8	−14.1	−13.6	−10.6	−10.4	− 8.7	− 7.8	− 6.8	− 6.9	− 6.8	− 6.2
21	− 2.6	− 2.6	− 1.6	− 2.4	− 5.9	− 5.6	− 8.6	−12.5	−14.1	−14.8	−15.2	−15.6	−16.7	−17.4
22	−14.6	−14.0	−13.6	−13.1	−12.5	−11.7	−11.6	−10.4	− 8.6	− 6.6	− 6.6	− 6.1	− 5.5	− 7.4
23	−12.9	−15.2	−12.4	−13.6	−13.6	−11.4	−10.2	−10.6	−10.1	− 9.6	− 9.3	− 7.6	− 7.6	− 6.7
24	−12.3	−16.0	−15.5	−16.2	−18.0	−19.4	−16.4	−17.5	−18.1	−18.9	−17.0	−16.6	−18.3	−18.6
25	−15.4	−16.5	−17.7	−19.3	−18.4	−19.2	−19.0	−19.2	−19.6	−17.6	−17.6	−16.6	−16.1	−15.6
26	−18.1	−15.9	−17.9	−19.1	−19.2	−17.5	−16.3	−19.5	−19.4	−17.6	−15.6	−17.6	−17.6	−17.6
27	−11.6	−11.6	−12.5	−12.2	−13.2	−13.8	−14.5	−13.8	−13.1	−13.4	−12.1	−11.3	−10.7	− 9.7
28	−11.3	−16.4	−14.8	−15.1	−16.0	−17.2	−15.3	−17.4	−15.5	−18.6	−20.6	−19.1	−19.9	−19.6
29	−15.8	−14.5	−16.3	−16.1	−16.7	−17.7	−17.8	−18.7	−19.2	−18.1	−19.5	−18.4	−20.4	−20.6
30	−19.1	−19.5	−19.7	−19.1	−16.5	−17.6	−16.0	−15.3	−15.1	−15.4	−17.5	−17.4	−14.4	−17.5
31	−19.[illegible]	−17.3	−18.3	−17.1	−15.6	−14.5	−13.1	−12.5	−12.3	−11.0	−10.5	− 9.7	− 8.8	− 8.7
Means	−7.0903	−7.4806	−7.5194	−7.6613	−7.7419	−7.9387	−7.6152	−7.7194	−7.9323	−7.5613	−7.6710	−7.3516	−7.6419	−7.9226
Means in centigrade	−21.72	−21.94	−21.94	−22.06	−22.06	−22.17	−22.00	−22.06	−22.17	−22.00	−22.06	−21.89	−22.00	−22.17

OCTOBER, 1882.

TABLE LVIII.—*Temperature of the air, October*, 1882.

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81^{\circ}\,44'$ $\lambda = -64^{\circ}\,45' = -4^{h}\,19^{m}$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
6.9	5.9	3.9	5.9	5.8	6.2	6.6	6.8	5.9	4.9	8.654	**14.0**	3.9[a]	10.1	−13.00	1
9.4	9.4	9.6	9.7	9.6	9.2	9.6	9.6	10.2	9.7	**8.875**	12.0	4.2	7.8	**−12.83**	2
8.8	7.9	6.8	6.5	5.8	4.8	4.8	4.7	3.8	3.6	8.117	11.3	3.5	7.8	−13.33	3
0.5	0.3	−1.2	−2.4	−1.0	−0.9	0.4	−1.8	−2.8	−4.2	0.896	6.0	−4.2[a]	10.2	−17.28	4
−9.2	−7.6	−8.6	−8.6	−9.2	−8.7	−8.1	−9.6	−9.7	−9.4	−7.504	−3.0	−10.9	7.9	−21.94	5
−5.1	−5.0	−6.6	−5.4	−6.6	−7.3	−6.8	−6.4	−5.1	−4.8	−6.846	−4.2	−10.4	6.2	−21.56	6
−9.8	−10.8	−10.6	−10.4	−8.1	−10.4	−9.8	−9.7	−9.8	−8.6	−8.217	−5.0	−11.9	6.9	−22.33	7
−11.4	−11.7	−11.1	−11.4	−10.8	−10.4	−10.6	−8.6	−8.2	−10.1	−9.375	−6.5	−12.2	5.7	−23.00	8
−9.8	−10.5	−10.1	−8.8	−7.9	−9.6	−8.9	−9.2	−9.6	−7.6	−9.688	−6.9	−11.5	4.6	−23.17	9
0.7	−0.2	0.5	1.9	3.7	4.5	5.5	6.1	6.4	4.9	−1.025	7.0	−9.4	16.4	−18.33	10
2.4	2.5	3.4	3.2	3.4	3.6	2.4	−1.5	−1.4	−2.0	1.404	6.6	−3.0	9.6	−17.00	11
−6.4	−7.2	−7.6	−6.1	−6.9	−6.1	−4.1	−2.9	−0.9	−1.1	−4.442	2.2	−7.6[a]	9.8	−20.22	12
2.3	3.2	2.4	2.4	2.2	2.2	1.9	1.9	1.4	0.2	0.612	3.5	−2.5	6.0	−17.44	13
−1.4	−0.8	−2.5	−1.6	−0.2	−0.5	−0.7	−0.7	−0.3	−0.6	0.138	3.0	−3.0	6.0	−17.17	14
−1.0	−1.6	−2.4	−3.8	−2.8	−3.0	−3.2	−3.1	−3.0	−3.1	−1.217	6.0	−3.8[a]	9.8	−18.44	15
−10.5	−8.1	−7.8	−9.4	−11.0	−12.0	−9.9	−10.3	−10.6	−11.5	−8.379	−1.2	−12.5	11.3	−22.44	16
−16.6	−15.8	−14.9	−10.5	−14.2	−14.6	−12.5	−9.8	−12.9	−12.6	−14.042	−7.5	−19.6	12.1	−25.56	17
−14.6	−15.2	−16.8	−15.8	−14.5	−13.5	−13.5	−14.1	−13.5	−13.5	−12.738	−3.0	−17.4	14.4	−24.83	18
−17.5	−18.8	−20.8	−21.4	−20.9	−23.5	−21.5	−19.5	−21.6	−19.6	**−17.862**	−13.1[a]	**−23.5**[a]	10.4	**−27.72**	19
−5.8	−5.6	−6.0	−5.5	−4.9	−5.5	−5.3	−5.4	−1.6	−3.1	−8.696	−1.0	−22.6	21.6	−22.61	20
−18.1	−17.7	−17.4	−17.4	−16.8	−17.1	−16.0	−16.1	−15.8	−15.4	−12.642	−1.0	−19.3	18.3	−24.78	21
−8.6	−6.6	−11.5	−10.6	−12.4	−12.5	−12.0	−13.8	−7.9	−11.4	−10.400	−4.0	−16.0	12.0	−23.56	22
−6.6	−5.6	−5.6	−6.4	−8.4	−8.7	−10.4	−12.2	−14.3	−15.8	−10.200	−3.0	−15.8[a]	12.8	−23.44	23
−19.1	−19.6	−18.8	−18.4	−20.4	−19.6	−18.6	−17.9	−16.6	−16.7	−17.688	−8.0	−21.2	13.2	−27.61	24
−14.1	−15.1	−17.1	−16.4	−18.6	−16.7	−16.6	−14.8	−18.2	−19.2	−17.275	−14.0	−20.2	6.2	−27.39	25
−16.5	−15.6	−13.6	−13.3	−13.1	−12.5	−11.8	−11.9	−12.1	−11.7	−15.875	−11.3	−20.7	9.4	−26.61	26
−8.9	−9.1	−9.6	−10.6	−10.6	−10.1	−10.6	−11.1	−9.7	−14.6	−11.600	−8.8	−15.1	6.3	−24.22	27
−21.1	−21.2	−20.8	−19.6	−17.7	−16.6	−14.6	−14.4	−13.6	−16.1	−17.188	−11.2	−22.4	11.2	−27.33	28
−18.9	−21.2	−19.1	−16.7	−15.5	−16.4	−16.5	−16.6	−17.8	−18.6	−17.796	−14.0	−22.1	8.1	−27.67	29
−17.9	−19.1	−19.3	−17.1	−16.5	−14.1	−18.6	−18.1	−16.8	−18.5	−17.338	−13.0	−20.3	7.3	−27.29	30
−8.5	−8.3	−8.1	−6.6	−7.6	−7.0	−6.9	−6.9	−7.1	−7.0	−10.938	−6.0	−19.8	13.8	−23.83	31
−7.9484	**−7.0258**	−7.4290	−7.8903	−7.9387	−7.9613	−7.6226	−7.6548	−7.5226	**−8.1774**	−7.7507	−2.39	−12.49	10.10	....	
−22.17	**−21.67**	−21.89	−22.17	−22.17	−22.22	−22.00	−22.00	−21.94	**−22.33**	−22.06	−19.10	−24.72	5.61	−22.06	

[a] From the observed hourly readings.

NOVEMBER, 1882.

TABLE LIX.—*Temperature of the air, November, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	− 7.3	− 6.9	− 7.1	− 7.1	− 6.5	− 6.7	− 7.8	− 7.7	− 8.1	− 8.8	−13.1	−13.6	−14.6	−15.5
2	−13.6	−16.1	−17.1	−16.9	−16.6	−19.4	−21.1	−19.5	−21.1	−16.9	−19.1	−20.2	−21.5	−18.1
3	−20.0	−18.6	−18.1	−19.1	−22.0	−21.8	−23.5	−20.8	−20.1	−17.6	−16.2	−15.5	−15.1	−14.6
4	−15.6	−15.2	−15.6	−16.2	−16.1	−16.1	−15.6	−15.0	−14.8	−13.6	−14.5	−13.6	−14.4	−14.4
5	−26.6	−24.9	−25.7	−25.9	−26.8	−26.0	−27.1	27.4	−28.6	−27.6	−28.7	−27.5	−28.4	−27.9
6	−29.4	−28.4	−31.1	−31.7	−29.5	−29.7	−28.6	−29.1	−26.8	−30.6	−28.9	−25.9	−26.1	−24.7
7	−22.5	−22.6	−22.9	−22.6	−22.7	−22.4	−22.4	−22.5	−22.6	−23.8	−25.4	−25.5	−24.2	−25.4
8	−30.4	−31.0	−30.9	−30.5	−32.1	−30.2	−29.4	−30.4	−30.0	−29.6	−31.5	−30.6	−32.4	−31.2
9	−35.4	−33.0	−33.1	−32.2	−34.0	−32.3	−34.4	−33.7	−37.2	−33.6	−35.6	−35.6	−36.1	−35.3
10	−37.0	−37.3	−36.1	−37.0	−37.2	−35.1	−36.9	−36.7	−40.2	−34.6	−39.6	−38.6	−34.5	−33.6
11	−37.1	−36.8	−39.0	−37.4	−36.9	−39.0	−37.0	−37.5	−34.8	−36.4	−35.6	−33.5	−34.3	−35.4
12	−35.4	−34.5	−36.2	−36.3	−34.7	−34.2	−34.9	−32.6	−33.6	−32.6	−33.1	−33.1	−32.9	−33.6
13	−24.3	−21.3	−18.3	−15.7	−16.0	−15.2	−17.4	−18.0	−20.5	−21.4	− 3.7	−21.1	−19.1	−22.8
14	−24.8	−23.0	−23.4	22.4	−23.1	−23.8	−23.2	−24.5	−24.6	−24.7	−25.5	−23.4	−23.1	−22.1
15	−14.5	−15.1	−13.6	−16.6	−17.0	−18.3	−17.0	−17.9	−17.4	−17.1	−15.1	− 7.4	− 2.1	− 2.4
16	−15.6	−15.1	−15.4	−17.0	−17.6	−17.8	−19.1	−19.8	−20.6	−22.4	−23.2	−23.4	−23.8	−25.2
17	−31.6	−29.8	−30.6	−32.9	−33.6	−32.0	−33.5	−33.2	−33.2	−31.3	−35.4	−34.1	−35.1	−34.6
18	−32.2	−34.3	−33.6	−35.4	−35.9	−35.1	−36.5	−35.9	−39.3	−36.5	−35.5	−34.5	−34.8	−32.6
19	−29.3	−26.6	−26.1	−25.7	−25.6	−26.2	−25.6	−25.5	−25.6	−25.2	−23.6	−24.2	−23.6	−22.6
20	−19.9	−19.8	−19.1	−19.4	−19.4	−19.8	−21.0	−21.8	−22.6	−23.0	−24.4	−22.7	−24.3	−25.7
21	−27.8	−28.9	−29.0	−29.6	−29.6	−29.0	−28.8	−28.8	−28.5	−28.8	−28.7	−30.1	−28.3	−30.2
22	−30.0	−30.1	−31.6	−30.0	−33.1	−31.5	−33.7	−32.6	−29.6	−33.5	−33.1	−33.4	−33.6	−33.7
23	−33.5	−35.0	−35.1	−34.1	−34.7	−35.1	−35.1	−34.5	−35.3	−36.6	−35.7	−35.4	−33.5	−32.4
24	−32.1	−32.5	−33.1	−33.3	−33.5	−34.4	−36.5	−35.6	−36.8	−35.4	−36.5	−36.1	−36.1	−36.1
25	−30.6	−34.0	−32.7	−32.4	−33.9	−33.5	−34.5	−34.3	−35.2	−34.7	−34.0	−34.9	−33.9	−34.6
26	−31.5	−32.5	−30.6	31.8	−31.0	−31.8	−31.4	−31.9	−32.8	−32.0	−31.0	−32.6	−33.1	−34.3
27	−31.9	−31.1	−28.8	−31.2	−30.5	−25.1	−32.5	−32.7	−33.5	−31.8	−31.8	−33.4	−31.9	−32.7
28	−31.3	−28.2	−30.9	−28.9	−33.5	−33.5	−31.4	−31.5	−32.1	−32.4	−30.9	−32.2	−31.9	−32.2
29	−34.0	−31.4	−35.3	−37.2	−33.1	−36.3	−39.1	−36.9	−34.8	−36.5	−39.6	−41.1	−36.8	−40.0
30	−43.8	−42.3	−42.9	−37.3	−42.3	−42.2	−39.0	−40.9	−37.9	−38.6	−38.9	−36.6	−34.4	−36.4
Means	−27.633	−27.210	−27.433	−27.460	−27.950	−27.783	−28.467	−28.307	−28.607	−28.253	−28.263	−28.327	−27.797	−28.010
Means in centigrade.	−33.11	−32.89	−33.00	−33.06	−33.33	−33.22	−33.61	−33.50	−33.67	−33.50	−33.50	−33.50	−33.22	−33.33

NOVEMBER, 1882.

TABLE LIX.—*Temperature of the air, November*, 1882.

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
—14.1	—15.6	—14.7	—15.6	—14.8	—16.7	—15.6	—15.4	—14.4	—16.0	—11.8208	— 4.0	—17.0	13.0	—24.33	1
—20.6	—21.6	—18.0	—19.5	—22.4	—18.9	—19.5	—22.4	—20.5	—19.9	—19.1875	—12.4	—22.4	10.0	—28.44	2
—14.2	—13.8	—13.2	—13.4	—12.8	—13.1	—12.9	—13.0	—12.6	—14.5	—16.5208	—12.6[a]	—24.3	11.7	—26.94	3
—14.8	—15.6	—16.5	—17.0	—20.5	—22.4	—23.7	—23.3	—22.4	—23.8	—17.1125	— 8.0	—24.5	16.5	—27.28	4
—30.0	—29.3	—26.7	—25.5	—26.9	—26.5	—26.2	—27.8	—27.4	—28.5	—27.2460	—23.0	—31.0	8.0	—32.89	5
—24.6	—23.8	—23.2	—23.1	—23.1	—22.2	—22.3	—22.9	—22.6	—22.1	—26.2667	—21.8	—32.3	10.5	—38.39	6
—27.8	—26.7	—29.8	—29.2	—30.2	—29.5	—30.7	—30.8	—31.4	—31.4	—26.0417	—22.1	—33.2	11.1	—32.22	7
—30.1	—29.5	—28.4	—30.5	—31.7	—32.8	—32.4	—32.4	—32.1	—33.6	—30.9875	—28.4[a]	—35.5	7.1	—35.00	8
—35.6	—36.6	—35.6	—37.2	—35.6	—37.6	—35.8	—37.5	—39.1	—37.3	—35.3917	—32.2[a]	—40.5	8.3	—37.44	9
—34.6	—31.7	—35.5	—35.5	—38.3	—37.1	—39.1	—38.6	—34.6	—39.3	—36.6125	—31.7[a]	—41.0	9.3	—38.11	10
—34.5	—35.1	—34.1	—34.5	—32.1	—36.1	—35.8	—34.3	—36.3	—35.0	—35.7708	—32.1[a]	—41.5	9.4	—37.67	11
—33.2	—31.1	—31.8	—30.5	—30.5	—30.6	—29.6	—29.2	—27.8	—23.2	—32.3000	—23.2[a]	—41.0	17.8	—35.72	12
—21.7	—22.3	—23.0	—22.2	—20.3	—25.0	—23.1	—23.1	—25.2	—22.6	—20.1375	— 2.9	—25.2[a]	22.3	—28.94	13
—20.4	—17.8	—17.1	—16.1	—17.5	—19.6	—15.7	—14.1	—12.8	—13.4	—20.6708	—10.7	—26.3	15.6	—29.28	14
— 5.5	— 6.6	— 8.0	— 9.6	—10.1	—12.4	—13.5	—13.6	—13.3	—15.3	—12.4750	— 1.1	—20.9	19.8	—24.72	15
—24.4	—25.2	—25.0	—25.7	—27.5	—25.8	—29.5	—30.1	—30.2	—29.8	—22.8833	— 9.9	—31.8	21.9	—30.50	16
—32.1	—33.3	—32.7	—33.5	—32.4	—31.5	—30.7	—31.6	—31.1	—31.0	—32.5333	—29.8	—36.8	7.0	—35.83	17
—32.8	—31.8	—32.6	—30.9	—30.4	—30.4	—30.2	—29.6	—29.5	—28.6	—33.2875	—28.6[a]	—39.3	10.7	—36.28	18
—21.7	—22.0	—22.4	—21.1	—20.2	—20.4	—20.3	—20.2	—20.1	—19.8	—23.4833	—19.8[a]	—30.5	10.7	—30.83	19
—24.6	—26.8	—25.6	—26.0	—26.8	—27.0	—27.5	—27.1	—28.4	—28.1	—23.7833	—18.5	—29.2	10.7	—31.00	20
—29.4	—31.3	—30.4	—30.3	—31.9	—32.5	—31.8	—30.8	—30.4	—31.8	—29.8625	—27.8[a]	—34.0	6.2	—34.39	21
—34.5	—34.4	—32.6	—33.0	—35.2	—34.6	—31.8	—32.4	—34.3	—33.7	—32.7500	—29.6[a]	—36.5	6.9	—36.00	22
—31.3	—30.7	—29.7	—29.4	—29.1	—28.7	—30.4	—30.1	—30.4	—31.1	—32.7875	—28.7[a]	—38.5	9.8	—36.00	23
—33.6	—34.8	—34.8	—35.1	—34.6	—33.6	—35.4	—33.6	—33.8	—32.8	—34.5875	—32.1[a]	—39.2	7.1	—37.00	24
—34.1	—31.6	—32.6	—33.0	—32.6	—31.8	—30.6	—29.3	—28.6	—29.8	—32.8000	—28.2	—37.6	9.4	—36.00	25
—33.6	—33.4	—34.6	—33.6	—32.6	—32.6	—32.5	—31.7	—31.6	—31.4	—32.3292	—24.0	—37.5	13.5	—35.72	26
—32.3	—27.7	—31.8	—26.4	—25.5	—29.6	—29.4	—28.4	—26.8	—30.4	—30.3000	—24.2	—35.4	11.2	—34.61	27
—34.2	—34.4	—32.5	—32.1	—35.2	—34.4	—35.2	—34.4	—33.6	—32.8	—32.4875	—28.0	—37.0	9.0	—35.83	28
—42.4	—39.9	—42.9	—44.3	—44.1	—43.6	—43.3	—43.2	—45.1	—42.1	—39.2917	—31.4[a]	—46.0	14.6	—39.61	29
—34.8	—33.8	—38.4	—35.8	—36.8	—35.6	—35.8	—35.8	—36.5	—33.0	—37.9083	—33.0[a]	—45.0	12.0	—38.83	30
—27.917	—27.607	—27.807	—27.653	—28.057	—28.420	—28.343	—28.223	—28.097	—28.070	—27.9872	—21.99	—32.70	11.70	....	
—33.28	—33.11	—33.22	—33.17	—33.39	—33.56	—33.50	—33.44	—33.39	—33.39	—33.33	—30.00	—36.50	6.50	—33.33	

[a] From the observed hourly readings.

DECEMBER, 1882.

TABLE LX.—*Temperature of the air, December, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	−35.4	−35.9	−35.8	−36.4	−36.3	−35.5	−35.6	−37.3	−36.6	−36.5	−35.8	−36.9	−36.2	−38.3
2	−36.4	−38.9	−37.6	−39.6	−39.0	−41.1	−39.1	−37.5	−40.2	−37.6	−40.6	−39.2	−40.0	−40.0
3	−37.6	−37.2	−40.0	−40.0	−39.9	−35.5	−37.4	−38.7	−38.4	−35.4	−36.0	−33.5	−32.2	−31.6
4	−31.7	−31.6	−30.6	−30.1	−29.6	−29.2	−28.6	−29.5	−28.6	−27.4	−27.5	−27.8	−28.4	−27.4
5	−30.9	−31.8	−30.5	−32.8	−32.6	−31.2	−32.6	−32.6	−33.1	−34.2	−30.5	−30.3	−33.4	−33.0
6	−30.6	−34.4	−32.6	−34.6	−32.8	−35.2	−33.5	−32.6	−36.5	−35.5	−33.6	−31.0	−34.0	−32.9
7	−33.9	−34.6	−35.5	−33.6	−35.2	−32.9	−30.5	−31.7	−30.1	−30.5	−28.8	−28.6	−27.1	−27.9
8	−33.8	−32.5	−34.0	−31.4	−33.0	−35.7	−34.1	−34.3	−35.4	−31.2	−33.8	−20.8	−18.8	−17.5
9	−33.7	−30.4	−31.1	−33.1	−32.1	−29.9	−31.1	−27.5	−29.4	−29.5	−28.0	−30.0	−29.6	−30.4
10	−31.7	−32.1	−29.5	−30.3	−32.1	−32.1	−29.5	−28.6	−28.4	−28.1	−28.3	−28.2	−25.5	−27.8
11	−27.9	−26.4	−29.5	−29.5	−26.7	−26.4	−29.1	−27.6	−27.8	−24.9	−24.0	−27.8	−24.7	−20.4
12	−21.0	−25.1	−27.0	−23.1	−27.6	−26.1	−22.2	−28.6	−29.9	−30.5	−31.6	−28.9	−30.0	−31.7
13	−32.0	−31.9	−32.9	−32.9	−32.4	−31.3	−32.7	−32.3	−32.0	−35.3	−33.5	−32.9	−35.2	−31.9
14	−33.7	−33.5	−31.6	−31.6	−31.7	−29.1	−28.6	−27.5	−26.5	−25.4	−26.0	−26.7	−25.6	−26.4
15	−25.6	−27.4	−22.7	−25.4	−27.1	−22.4	−25.8	−23.9	−26.5	−28.5	−24.9	−27.1	−24.6	−18.8
16	−21.1	−20.1	−22.0	−21.1	−19.8	−21.7	−21.6	−24.6	−26.7	−28.8	−30.4	−28.3	−28.6	−29.1
17	−34.6	−30.6	−33.3	−35.7	−34.7	−34.0	−32.9	−35.4	−35.6	−36.2	−32.6	−34.1	−33.3	−34.6
18	−25.4	−24.6	−23.6	−23.0	−22.1	−21.6	−21.8	−21.1	−21.5	−21.7	−23.2	−23.4	−24.6	−24.5
19	−25.4	−28.5	−27.8	−28.4	−28.6	−29.7	−31.5	−27.5	−30.1	−29.2	−27.5	−26.8	−25.7	−24.9
20	−20.2	−19.8	−19.4	−19.1	−19.0	−18.9	−18.8	−19.2	−19.5	−19.5	−19.6	−19.1	−19.4	−19.5
21	−22.8	−23.7	−24.2	−25.5	−26.4	−28.8	−28.1	−31.4	−32.4	−31.3	−36.1	−35.6	−29.6	−35.1
22	−33.0	−32.8	−29.4	−32.2	−33.6	−32.4	−33.0	−32.8	−31.7	−30.1	−31.5	−30.0	−29.8	−26.8
23	−27.6	−26.1	−27.7	−27.8	−28.5	−28.7	−28.4	−29.0	−29.0	−31.0	−30.1	−31.5	−31.0	−26.6
24	−26.4	−26.1	−22.6	−25.6	−25.4	−26.6	−25.1	−27.6	−28.6	−26.1	−27.1	−27.6	−26.2	−19.7
25	− 7.1	−11.0	− 4.1	− 1.0	− 1.4	0.6	0.8	− 2.8	− 2.4	− 3.7	− 0.4	− 3.6	− 2.4	− 3.4
26	− 3.8	− 3.1	− 2.4	− 2.6	− 3.0	− 2.1	− 2.6	− 3.2	− 3.5	− 3.8	− 4.1	−10.6	−10.8	−11.8
27	−28.6	−30.9	−29.3	−30.4	−30.6	−29.4	−32.7	−31.4	−30.9	−31.8	−32.1	−31.6	−31.8	−31.8
28	−36.2	−35.8	−35.3	−37.5	−34.6	−34.8	−34.8	−36.5	−33.0	−36.6	−33.5	−34.5	−34.5	−34.8
29	−20.1	−17.4	−15.8	−15.4	−13.6	−13.1	−15.0	−13.6	−12.6	−13.7	−13.7	−14.8	−17.1	−19.6
30	−21.1	−22.2	−22.1	−20.4	−20.1	−18.6	−18.1	−16.7	−17.4	−15.5	−16.1	−15.8	−17.0	−16.1
31	−25.5	−27.6	−27.8	−27.6	−29.1	−32.6	−30.7	−33.1	−34.7	−35.8	−37.4	−38.9	−36.6	−36.1
Means	-27.5742	-27.8710	-27.3452	-27.6677	-27.6968	-27.2903	-27.2484	-27.6161	-28.0323	-27.9129	-27.6871	-27.6097	-27.2161	**-26.7871**
Means in centigrade	−33.11	−33.28	−32.94	−33.17	−33.17	−32.94	−32.89	−33.11	−33.33	−33.28	−33.17	−33.11	−32.89	**−32.67**

DECEMBER, 1882.

TABLE LX.—*Temperature of the air, December,* 1882.

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\varphi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
−36.6	−35.7	−38.6	−38.6	−40.1	−40.1	−41.1	−35.8	−34.5	−41.1	−37.1125	−32.5	−43.0	10.5	−38.39	1
−42.0	−39.8	−40.1	−36.8	−40.6	−38.0	−39.6	−39.9	−35.6	−39.1	**−39.0958**	−34.8	**−43.1**	8.3	**−39.50**	2
−31.8	−32.5	−32.1	−32.9	−33.1	−33.6	−34.1	−33.6	−34.4	−32.1	−35.1500	−31.6[a]	−41.0	9.4	−37.33	3
−29.7	−29.5	−30.2	−28.1	−30.5	−28.6	−31.6	−28.6	−33.6	−31.6	−29.5833	−27.4[a]	−34.5	7.1	−34.22	4
−33.4	−34.8	−33.4	−34.6	−36.2	−36.6	−33.6	−33.7	−33.6	−31.8	−32.9667	−28.8	−37.6	8.8	−36.11	5
−30.9	−33.0	−34.6	−34.4	−31.2	−33.5	−34.6	−29.6	−35.4	−3[illegible].4	−33.4750	−29.6[a]	−38.5	8.9	−36.39	6
−28.4	−26.1	−27.8	−27.6	−27.6	−27.8	−30.5	−29.8	−31.8	−32.0	−30.4292	−26.0	−37.2	11.2	−34.67	7
−20.5	−30.5	−30.5	−34.8	−36.1	−35.9	−36.5	−36.1	−32.8	−32.1	−31.3375	−17.2	−38.1	20.9	−35.17	8
−32.6	−29.2	−29.9	−30.5	−28.8	−30.3	−31.6	−29.9	−30.5	−30.5	−30.4000	−23.5	−37.6	14.1	−34.67	9
−23.8	−28.6	−27.6	−28.8	−23.6	−24.8	−27.8	−25.5	−27.6	−27.9	−28.2583	−23.1	−33.3	10.2	−33.50	10
−25.6	−26.5	−26.7	−24.8	−24.6	−24.1	−23.9	−20.6	−25.2	−27.7	−25.9333	−20.4[a]	−30.7	10.3	−32.17	11
−29.6	−31.4	−30.8	−32.1	−31.1	−28.6	−32.6	−30.8	−32.0	−32.4	−28.9458	−21.0[a]	−33.0	12.0	−33.83	12
−34.1	−34.8	−35.6	−33.4	−34.4	−34.6	−34.8	−34.3	−34.2	−33.6	−33.4582	−31.3[a]	−38.0	6.7	−36.39	13
−27.4	−27.8	−25.6	−26.8	−27.1	−26.2	−21.4	−23.6	−26.1	−24.7	−27.5250	−21.4[a]	−36.0	14.6	−33.06	14
−22.8	−21.0	−21.7	−21.1	−21.9	−20.8	−20.8	−20.2	−22.4	−16.7	−23.3375	−16.7[a]	−29.2	12.5	−30.72	15
−28.6	−29.1	−32.1	−33.6	−34.6	−32.8	−33.6	−35.4	−32.4	−31.6	−27.8208	−19.8[a]	−36.7	16.9	−33.22	16
−34.6	−35.7	−34.4	−34.6	−31.6	−32.6	−31.6	−31.5	−30.6	−28.4	−33.4667	−28.4[a]	−38.0	9.6	−36.39	17
−27.6	−27.6	−28.3	−27.6	−29.2	−27.6	−28.2	−28.1	−27.6	−27.7	−25.0667	−21.1[a]	−31.2	10.1	−31.72	18
−24.8	−24.5	−23.1	−21.1	−22.4	−22.8	−22.5	−21.7	−21.2	−20.7	−25.6833	−20.7[a]	−33.0	12.3	−32.06	19
−19.6	−19.4	−19.5	−18.8	−19.6	−19.6	−20.4	−21.9	−22.8	−23.5	−19.8375	−12.8	−23.7	10.9	−28.78	20
−33.4	−36.1	−35.8	−36.9	−38.1	−34.3	−32.9	−35.1	−36.1	−36.8	−31.9375	−19.2	−39.5	20.3	−35.50	21
−24.6	−23.0	−23.6	−22.7	−22.1	−20.3	−20.4	−21.8	−25.8	−26.8	−27.9250	−19.0	−37.0	18.0	−33.28	22
−31.4	−31.1	−29.4	−27.8	−29.6	−27.4	−27.6	−27.8	−26.4	−27.6	−28.7125	−26.1[a]	−32.0	5.9	−33.72	23
−20.5	−20.9	−19.0	−19.6	−20.9	−11.6	−10.6	− 6.6	− 2.5	− 1.1	−20.5833	0.5	−29.9	30.4	−29.22	24
1.9	2.2	− 1.7	− 2.1	− 2.6	− 1.8	1.2	2.0	1.3	0.1	**− 1.7333**	3.8	−11.0[a]	14.8	**−18.72**	25
−17.1	−16.5	−19.9	−20.5	−22.6	−22.6	−26.6	−28.0	−24.6	−26.3	−12.1708	**5.5**	−28.7	34.2	−24.56	26
−33.6	−35.8	−34.0	−35.6	−38.4	−40.2	−34.6	−35.1	−34.8	−36.1	−32.9792	−26.0	−41.0	15.0	−36.11	27
−34.5	−30.1	−28.4	−27.9	−25.9	−26.6	−25.8	−26.1	−24.5	−19.7	−31.7458	−19.0	−39.0	20.0	−35.39	28
−21.8	−22.1	−23.6	−23.8	−23.9	−24.1	−22.6	−23.5	−23.4	−22.4	−18.6125	− 8.2	−24.1[a]	15.9	−28.11	29
−16.1	−17.1	−16.9	−19.1	−19.1	−24.6	−25.1	−26.7	−26.4	−27.3	−19.8167	−11.0	−29.0	18.0	−28.78	30
−38.1	−36.8	−38.7	−39.4	−40.5	−39.3	−40.7	−40.1	−42.6	−43.3	−35.5417	−25.0	−43.9	18.9	−37.50	31
−27.5355	−27.8968	−28.1806	−28.2710	**−28.6452**	−28.1194	−28.2742	−27.7226	−28.0677	−28.0355	−27.7626	−20.38	−34.47	14.09	-------	
−33.06	−33.28	−33.44	−33.50	**−33.67**	−33.39	−33.50	−33.17	−33.39	−33.33	−33.20	−29.10	−36.89	7.83	−33.20	

[a] From the observed hourly readings.

JANUARY, 1883.

Table LXI.—*Temperature of the air, January*, 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64' 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	-41.4	-40.6	-41.1	-42.1	-42.3	-42.6	-41.8	-42.3	-42.6	-42.0	-43.5	-43.2	-43.4	-41.3
2	-36.2*	-36.8*	-36.2*	-36.3*	-35.2*	-33.7*	-33.4*	-33.9*	-33.2*	-33.4*	-33.7*	-37.1	-36.2*	-39.1
3	-41.4	-41.1	-38.2	-38.6	-38.6	-38.5	-38.4	-39.1	-40.1	-41.7	-41.4	-41.6	-41.4	-39.7
4	-36.5	-35.5	-38.2	-36.6	-40.1	-39.8	-42.1	-41.3	-40.4	-40.0	-41.3	-40.9	-45.5	-43.6
5	-37.1	-38.6	-34.3*	-33.7	-30.8*	-31.5*	-32.0*	-25.9*	-26.3*	-25.1	-25.2	-24.6	-23.8	-22.5
6	-22.6	-22.8	-23.6	-23.8	-26.0	-26.6	-25.8	-27.3	-27.5	-29.6	-28.3	-30.1	-29.3	-30.2
7	-28.7	-34.6	-30.4	-26.6	-29.1	-29.1	-30.2	-30.1	-33.8	-31.5	-33.8	-28.3	-29.3	-31.5
8	-33.6	-32.1	-34.8	-34.6	-34.4	-36.6	-35.6	-31.6	-34.2	-36.0	-34.8	-36.0	-36.5	-36.2
9	-31.0	-33.4	-3[illegible].4	-34.3	-34.1	-33.4	-33.9	-32.3	-32.4	-30.5	-27.4	-27.6	-30.8	-32.6
10	-30.6	-35.4	-33.8	-30.5	-32.1	-35.5	-32.6	-37.1	-35.1	-35.7	-38.2	-36.7	-35.6	-38.1
11	-36.5	-35.5	-38.1	-35.4	-35.1	-36.2	-36.8	-35.0	-35.6	-39.1	-36.4	-40.1	-41.1	-36.5
12	-31.8	-32.4	-32.0	-31.6	-31.4	-30.9	-30.7	-30.5	-30.6	-30.6	-30.3	-30.4	-30.1	-30.7
13	-32.6	-33.8	-33.5	-34.5	-37.1	-34.1	-34.6	-37.1	-39.1	-38.2	-41.2	-41.9	-40.2	-40.1
14	-43.0	-43.0	-43.0	-42.3	-38.0	-40.1	-39.1	-43.9	-43.1	-41.2	-39.9	-44.1	-44.0	-40.9
15	-40.1	-39.9	-38.3	-37.2	-37.1	-36.6	-42.1	-43.6	-44.3	-42.9	-43.3	-42.4	-43.0	-41.9
16	-44.3	-44.9	-43.9	-46.0	-42.1	-45.4	-46.1	-46.3	-45.1	-48.5	-47.1	-44.3	-47.4	-44.1
17	-45.0	-44.8	-41.5	-41.7	-41.7	-40.9	-39.8	-39.6	-38.9	-38.3	-38.2	-38.1	-38.8	-38.0
18	-35.9	-37.8	-37.1	-36.8	-37.2	-39.2	-40.7	-40.1	-39.0	-38.1	-38.0	-37.8	-38.4	-37.9
19	-41.7	-43.4	-44.4	-44.5	-45.7	-45.2	-45.5	-47.4	-47.2	-44.8	-45.9	-45.6	-43.1	-41.2
20	-45.3	-45.6	-46.6	-45.2	-45.7	-44.7	-43.4	-43.4	-42.9	-44.9	-45.3	-45.2	-44.1	-44.6
21	-32.4	-32.2	-31.1	-32.7	-31.2	-30.5	-30.6	-31.1	-31.1	-31.1	-28.7	-29.1	-29.3	-29.6
22	-37.4	-38.7	-35.8	-36.4	-36.1	-35.5	-34.5	-34.4	-33.4	-33.6	-34.3	-35.0	-35.5	-34.6
23	-31.9	-31.2	-30.5	-30.5	-30.5	-31.1	-31.2	-31.3	-32.3	-30.6	-30.8	-31.5	-33.2	-33.5
24	-42.6	-42.4	-39.1	-42.2	-39.1	-43.5	-40.1	-39.1	-39.1	-38.4	-38.1	-39.0	-39.4	-40.5
25	-42.3	-41.9	-43.1	-36.6	-42.1	-39.9	-43.1	-40.1	-43.9	-42.6	-43.4	-42.6	-42.1	-42.2
26	-39.1	-40.1	-40.2	-37.4	-33.6	-36.4	-36.6	-37.6	-40.1	-38.4	-38.9	-38.4	-36.6	-35.6
27	-26.4	-26.0	-25.6	-25.3	-24.9	-24.5	-23.9	-23.6	-24.4	-27.8	-29.1	-29.9	-30.1	-30.4
28	-34.0	-35.2	-33.6	-34.1	-30.5	-29.0	-28.2	-26.9	-26.6	-25.4	-24.6	-24.0	-24.5	-24.6
29	-27.3	-29.1	-28.8	-27.6	-26.8	-26.4	-27.9	-27.7	-27.6	-26.5	-26.3	-27.2	-27.4	-26.9
30	-31.1	-31.5	-31.0	-28.6	-30.6	-29.4	-28.8	-28.8	-29.0	-28.9	-29.5	-28.5	-28.6	-27.8
31	-30.4	-30.6	-31.0	-30.1	-32.6	-32.4	-32.5	-32.5	-35.0	-32.6	-35.8	-38.5	-37.9	-40.1
Means	-35.8129	**-36.4806**	-35.8452	-35.2839	**-35.1871**	-35.4581	-35.5484	-35.5129	-35.9323	35.741[illegible]	-35.8935	-36.1387	-36.3419	-36.0161
Means in centigrade	-37.67	**-38.06**	-37.67	-37.39	**-37.33**	-37.50	-37.50	-37.50	-37.72	-37.61	-37.72	-37.83	-37.94	37.78

JANUARY, 1883.

TABLE LXI.—*Temperature of the air, January*, 1883.

Washington mean time. Reduce to local mean time by adding 49[m]

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
−40.8	−39.6	−38.1	−40.0	−41.3	−40.9	−36.1[a]	−38.6	−38.0	−35.3[a]	−40.7458	−35.3[a]	−45.2	9.9	−40.39	1
−38.9	−35.8[a]	−40.1	−36.2[a]	−34.8[a]	−40.1	−36.5[a]	−37.2	−40.1	−37.6	−36.3208	−33.2[a]	−43.8	10.6	−37.94	2
−40.1	−36.9	−36.5	−35.8	−36.1	−30.4	−35.0	−39.0	−37.1	−37.1	−38.4917	−30.4[a]	−43.0	12.6	−39.17	3
−43.6	−41.9	−39.2	−40.3	−40.7	−42.3	−41.0	−39.0	−37.1	−38.1	−40.2083	−35.5[a]	−46.1	10.6	−40.11	4
−22.4	−22.0	−21.7	−21.8	−21.7	−21.7	−21.8	−22.4	−22.5	−22.6	**−26.3333**	**−18.0**	−39.4	21.4	**−32.39**	5
−28.6	−27.2	−30.1	−29.6	−25.6	−30.5	−30.9	−28.1	−30.6	−25.5	−27.5083	−21.0	−32.0	11.0	−33.06	6
−28.1	−30.4	−33.1	−32.7	−32.1	−34.6	−33.7	−36.1	−33.8	−35.2	−31.5333	−24.8	−38.0	13.2	−35.28	7
−35.6	−35.4	−32.3	−33.5	−32.5	−32.7	−31.8	−32.6	−33.6	−30.2	−34.0500	−30.2[a]	−38.7	8.5	−36.67	8
−28.6	−29.6	−30.0	−31.4	−32.1	−32.5	−33.2	−32.6	[illegible]	−33.6	−31.8125	−27.4[a]	−36.6	9.2	−35.44	9
−36.4	−35.3	−37.2	−36.1	−36.1	−35.5	−35.4	−36.9	−37.1	−35.6	−35.3583	[illegible]	−39.5	9.5	−37.44	10
−35.0	[illegible]	−38.6	−36.4	−35.6	−35.2	−34.1	−33.5	−32.5	−32.6	−36.2500	−32.5	−41.7	9.2	−37.89	11
−31.1	−30.8	−31.2	−31.6	−31.6	−32.2	−34.5	−34.1	−33.8	−33.6	−31.6042	−30.1[a]	−35.6	5.5	−35.33	12
−42.6	−39.1	−41.5	−40.7	−41.0	−43.3	−42.9	−41.8	−44.0	−41.3	−39.0083	−30.3	−45.2	14.9	−39.44	13
−42.1	−41.6	−40.0	−38.9	−40.3	−37.6	−37.7	−34.6	−37.5	−37.5	−40.5583	−34.6[a]	−45.0	10.4	−40.33	14
−43.0	−44.2	−44.5	−41.0	−41.3	−40.1	−46.0	−44.6	−42.1	−44.2	−41.8208	−36.6[a]	−46.0	9.4	−41.00	15
−44.1	−44.9	−46.1	−47.1	−48.0	−45.1	−45.1	−45.1	−46.2	−45.2	**−45.5167**	−42.1[a]	**−50.6**	8.5	**−43.06**	16
−38.0	−38.0	−38.1	−38.0	−37.6	−36.6	−36.6	−36.4	−36.6	−35.6	−39.0333	−35.6[a]	−46.0	10.4	−39.44	17
−37.4	−38.1	−37.4	−38.1	−38.4	−38.3	−39.1	−38.6	−39.1	−41.2	−38.3208	−35.6[a]	−41.6	6.0	−39.06	18
−43.0	−40.9	−43.1	−47.4	−44.1	−42.4	−45.7	−46.9	−46.1	−45.2	−44.6000	−41.2[a]	−47.9	6.7	−42.56	19
−43.6	−39.6	−41.2	−38.6	−37.1	−36.2	−35.4	−33.8	−33.0	−33.5	−41.6208	−33.0	−48.0	15.0	−40.89	20
−30.6	−32.5	−34.6	−38.6	−40.6	−43.4	−36.6	−44.1	−42.1	−39.6	−33.8917	−28.7[a]	−44.9	16.2	−36.61	21
−34.8	−34.0	−33.5	−33.2	−33.0	−32.6	−32.5	−32.5	−32.6	−32.1	−34.4167	−32.1[a]	−41.3	9.2	−36.89	22
−35.0	−34.0	−37.6	−35.4	−37.2	−37.1	−40.6	−39.6	−42.6	−43.3	−34.2708	−30.5[a]	−43.3[a]	12.8	−36.83	23
−41.1	−40.5	−42.1	−37.1	−39.3	−38.0	−40.7	−41.9	−38.6	−39.1	−40.0667	−37.1[a]	−45.7	8.6	−40.06	24
−40.1	−37.1	−38.1	−38.0	−36.6[m]	−35.6	−38.4	−37.6	−36.5	−36.2	−40.0041	−35.6[a]	−44.0	8.4	−40.00	25
−32.7	−32.2	−31.5	−31.1	−29.5	−29.0	−28.5	−27.6	−27.4	−27.0	−34.3958	−27.0	−41.0	14.0	−36.89	26
−31.6	−33.7	−33.6	−35.6	−34.8	−34.0	−34.6	−36.5	−36.6	−35.4	−29.9292	−23.6[a]	−37.1	13.5	−34.39	27
−24.5	−25.6	−25.4	−25.1	−25.8	−26.8	−27.1	−26.6	−27.1	−26.8	−27.5833	−24.0	−36.0	12.0	−33.11	28
−25.9	−27.8	−31.0	−30.8	−30.7	−30.4	−30.6	−30.6	−29.6	−29.9	−28.3667	−25.9[a]	−32.0	6.1	−33.56	29
−29.1	−29.1	−28.1	−28.3	−27.6	−28.6	−29.4	−29.5	−29.5	−28.6	−29.1625	−27.6[a]	−33.0	5.4	−34.00	30
−39.9	−38.6	−39.9	−39.9	−43.1	−43.6	−40.1	−45.1	−45.0	−44.0	−37.1333	−26.0	−46.0	20.0	−38.39	31
−35.7516	−35.3387	−35.9806	−35.7516	−35.6839	−35.7194	−35.8581	−36.2419	−36.2000	−35.5710	−35.80376	−30.82	−41.75	10.93	--------	
−37.67	−37.39	−37.78	−37.67	−37.61	−37.61	−37.67	−37.89	−37.89	−37.56	−37.66	−34.91	−40.97	6.07	−37.66	

[a] From the observed hourly readings.

FEBRUARY, 1883.

TABLE LXII.—*Temperature of the air, February, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	−39.6	−42.3	−40.8	−41.1	−46.6	−42.3	−45.5	−43.6	−45.1	−45.0	−44.3	−46.2	−45.0	−45.3
2	−46.0	−46.6	−44.9	−44.9	−47.6	−45.1	−46.0	−44.9	−46.1	−46.1	−45.2	−45.2	−45.6	−46.5
3	−49.9	−50.0	−50.2	−49.3	−49.1	−49.3	−48.6	−49.6	−50.1	−50.3	−50.2	−50.2	−50.2	−49.6
4	−50.0	−46.9	−44.1	−44.0	−43.6	−42.4	−41.1	−42.0	−43.1	−44.6	−45.2	−44.6	−45.1	−47.1
5	−46.9	−47.2	−48.1	−45.0	−42.2	−45.0	−44.7	−46.3	−45.6	−44.2	−44.1	−42.1	−43.2	−43.3
6	−40.4	−40.0	−42.9	−43.0	−43.1	−42.1	−43.8	−41.5	−43.3	−45.1	−46.6	−43.6	−42.6	−44.2
7	−41.6	−42.6	−38.0	−38.6	−39.0	−39.1	−39.3	−40.0	−40.4	−40.2	−40.6	−41.1	−40.1	−40.3
8	−43.4	−43.8	−43.6	−43.4	−40.0	−40.0	−37.6	−39.4	−39.6	−37.2	−37.1	−37.5	−38.0	−36.5
9	−37.5	−36.6	−37.1	−36.5	−36.8	−35.7	−35.5	−35.9	−34.7	−35.5	−34.4	−36.9	−36.8	−35.5
10	−36.7	−36.6	−37.4	−37.1	−37.4	−37.5	−38.5	−36.0	−35.4	−36.9	−34.8	−35.5	−35.1	−34.9
11	−37.5	−37.1	−36.9	−39.4	−39.6	−39.5	−39.6	−39.1	−38.4	−36.1	−39.0	−36.5	−36.1	−35.8
12	−30.6	−29.0	−29.6	−29.3	−29.1	−28.6	−27.6	−26.1	−26.4	−24.8	−24.7	−23.8	−23.6	−23.5
13	−35.6	−35.8	−37.2	−35.9	−35.6	−32.7	−28.6	−25.0	−26.0	−26.1	−27.8	−29.6	−29.4	−32.6
14	−42.1	−42.1	−44.9	−41.6	−40.9	−41.1	−40.9	−43.1	−38.9	−45.2	[e]−32.9[f]	−41.0	−42.2	−39.4
15	−37.4	−42.0	−42.9	−40.3	−36.8	−40.1	−40.4	−38.1	−43.1	−44.6	−41.2	−45.6	−45.1	−45.1
16	−47.9	−49.1	−46.6	−49.6	−47.6	−47.1	−46.1	−47.6	−50.9	−49.6	−46.0	−46.1	−44.1	−47.9
17	−46.1	−47.1	−45.6	−47.1	−47.1	−45.1	−46.6	−46.3	−45.1	−46.9	−46.1	−41.3	−41.6	−43.1
18	−42.1	−40.1	−45.6	−44.1	−45.6	−41.3	−43.6	−40.1	−41.1	−41.3	−42.1	−41.6	−41.8	−39.9
19	−38.1	−39.3	−38.6	−38.4	−39.1	[e]−36.2[f]	−35.6	−34.8	−36.6	−33.8	−31.2	−31.7	−32.0	−30.8
20	−23.4	−26.8	−25.6	−24.8	−26.0	−25.1	−22.6	−22.6	−21.6	−20.3	−18.7	−18.5	−18.4	−18.8
21	−13.6	−14.0	−13.8	−13.8	−12.4	−12.6	−12.6	−12.6	−12.6	−11.8	−11.1	−12.3	−13.2	−11.7
22	−14.1	−16.0	−16.1	−16.4	−14.2	−13.9	−14.3	−15.8	−16.4	−15.9	−16.4	−16.1	−16.2	−15.4
23	−27.0	−26.6	−28.1	−31.4	−29.6	−34.6	−30.6	−33.5	−40.2	−36.6	−40.5	−41.1	−36.0	−43.9
24	−44.2	−42.0	−45.1	−44.3	−43.2	−42.6	−39.2	−41.5	−45.1	−46.1	−47.5	−46.6	−48.1	−47.3
25	−46.3	−46.1	−46.1	−44.1	−44.0	−44.7	−43.1	−46.1	−46.0	−50.1	−46.6	−48.1	−51.6	−51.1
26	−44.3	−47.0	−45.1	−44.6	−44.1	−41.0	−39.6	−39.4	−40.3	−39.6	−37.6	−38.1	−38.6	−38.6
27	−52.9	−51.0	−50.6	−47.3	−47.9	−47.1	−45.3	−42.1	−44.1	−52.1	−52.6	−54.1	−53.1	−47.1
28	−45.6	−47.3	−48.4	−50.0	−51.1	−52.1	−50.3	−49.6	−52.1	−52.3	−53.4	−52.1	−53.1	−51.6
Means	−39.3143	−39.6786	−39.7821	−39.4750	−39.2607	−38.7107	−38.1143	−37.9500	−38.8679	−39.2250	−38.4964	−38.8250	−38.7821	−38.8143
Means in centigrade.	−39.61	−39.83	−39.89	−39.72	−39.61	−39.28	−38.94	−38.89	−39.39	−39.56	−39.17	−39.33	−39.33	−39.33

[e] Spirit. [f] Mercury frozen

FEBRUARY, 1883.

TABLE LXII.—*Temperature of the air, February, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
−44.5	−45.6	−43.4	−44.1	−45.1	−44.0	−44.9	−44.8	−46.4	−47.3	−44.2833	−35.8	−48.8	13.0	−42.39	1
−46.7	−46.8	−46.9	−46.3	−46.2	−47.6	−47.3	−48.3	−49.3	−49.6	−46.4875	−44.9[a]	−50.8	5.9	−43.61	2
−50.2	−50.5	−51.6	−52.2	−51.1	−52.1	−52.0	−51.6	−51.9	−52.1	−50.5333	−48.6[a]	−53.4	4.8	−45.83	3
−47.1	−45.8	−48.0	−45.2	−46.9	−46.9	−47.3	−47.1	−48.0	−45.2	−45.4708	−41.1[a]	−52.1[a]	11.0	−43.06	4
−41.7	−40.6	−39.0	−39.3	−39.3	−39.1	−37.3	−39.1	−40.1	−40.9	−42.6792	−37.3[a]	−49.0	11.7	−41.50	5
−43.1	−43.3	−42.1	−43.0	−42.1	−41.1	−41.7	−41.1	−42.0	−42.1	−42.6583	−40.0[a]	−47.0	7.0	−41.50	6
−39.1	−38.1	−38.3	−37.3	−38.3	−37.2	−37.1	−41.1	−38.1	−43.3	−39.5333	−37.1[a]	−44.2	7.1	−39.72	7
−38.9	−37.1[m]	−35.8	−35.4	−36.1	−36.8	−35.6	−35.8	−35.6	−35.1	−38.3042	−34.0	−46.1	12.1	−39.06	8
−35.9	−36.2	−34.6	−35.1	−36.6	−35.2	−37.5	−35.7	−34.6	−36.6	−35.9750	−32.8	−40.0	7.2	−37.78	9
−31.6	−34.1	−34.7	−37.4	−35.1	−38.1	−36.0	−35.6	−38.1	−38.6	−36.2125	−31.6[a]	−41.0	9.4	−37.89	10
−36.5	−35.0	−36.6	−34.7	−36.2	−34.4	−32.1	−31.1	−29.8	−29.6	−36.1083	−29.6[a]	−41.0	11.4	−37.83	11
−23.7	−24.4	−27.6	−27.4	−29.1	−29.6	−30.4	−33.1	−34.6	−32.6	−27.8833	−23.5[a]	−34.8	11.3	−33.28	12
−31.1	−33.1	−32.6	−32.7	−34.5	−36.1	−35.8	−37.1	−39.4	−35.4	−32.7375	−25.0	−40.9	15.9	−35.94	13
−41.1	−36.2	−38.1	−39.6	−38.1	−35.2	−40.2	−36.9	−36.4	−40.6	−39.9458	−32.9[a]	−45.6	12.7	−39.94	14
−45.2	−44.6	−44.6	−45.6	−47.3	−43.0	−45.1	−47.0	−44.7	−46.0	−43.1583	−36.8[a]	−48.0	11.2	−41.78	15
−45.3	−46.1	−48.0	−47.4	−47.5	−49.0	−48.1	−44.1	−44.0	−45.0	−47.1125	−44.0[a]	−51.0	7.0	−43.94	16
−41.1	−42.9	−43.1	−45.6	−42.9	−42.9	−41.5	−42.6	−40.1	−41.2	−44.1250	−40.1[a]	−48.7	8.6	−42.28	17
−38.1	−40.0	−40.3	−41.0	−40.2	−40.0	−37.3[f]	−38.1	−37.1[f]	−37.4[f]	−40.8250	−36.5	−46.0	9.5	−40.44	18
−30.4	−31.7	−32.4	−33.1	−29.4	−30.5	−30.7	−28.1	−25.6	−25.8	−33.0792	−25.6[a]	−40.3	14.7	−36.17	19
−17.4	−16.7	−16.5	−16.5	−16.1	−15.0	−14.5	−14.7	−14.2	−14.0	−19.5333	−14.0	−27.7	13.7	−28.61	20
−12.1	−12.5	−12.7	−12.5	−13.6	−14.4	−13.6	−12.9	−12.7	−13.5	**−12.8583**	−5.0	**−14.7**	9.7	**−24.94**	21
−15.8	−14.6	−15.1	−15.7	−15.6	−16.6	−18.1	−23.3	−25.2	−25.2	−16.7667	−12.8	−25.4	12.6	−27.11	22
−43.6	−47.6	−44.1	−44.1	−44.6	−42.1	−48.3	−41.2	−42.3	−45.1	−38.4458	−24.8	−49.0	24.2	−39.11	23
−46.1	−46.6	−45.3	−46.7	−45.1	−44.1	−41.6	−46.1	−45.1	−44.6	−44.7542	−39.2[a]	−49.4	10.2	−42.67	24
−47.6	−49.6	−46.1	−43.1	−49.0	−46.1	−43.3	−45.4	−47.6	−44.1	−46.4958	−43.1[a]	−51.7	8.6	−43.61	25
−39.6	−40.1	−42.6	−41.3	−46.1	−46.3	−46.1	−48.6	−50.3	−45.9	−42.7000	−36.2[a]	−50.0[a]	13.8	−41.50	26
−49.6	−52.7	−53.3	−51.4	−56.3	−52.1	−53.2	−49.9	−51.6	−48.1	−50.2292	−42.1[a]	**−56.5**	14.4	−45.67	27
−54.1	−55.1	−54.1	−53.1	−53.1	−52.6	−52.3	−50.1	−49.1	−46.3	**−51.2042**	−45.6[a]	−55.7	10.1	**−46.22**	28
38.4714	−38.8429	−38.8393	−38.8143	−39.3393	−38.8607	−38.9214	−38.9474	−39.0679	−38.9714	−38.9321	−33.57	−44.60	11.03	--------	
−39.17	−39.33	−39.33	−39.33	−39.61	−39.39	−39.39	−39.39	−39.50	−39.44	−39.41	−36.44	−42.55	6.12	−39.41	

[a] From the observed hourly readings. [m] Mercurial. [f] Mercury frozen.

MARCH, 1883.

TABLE LXIII.—*Temperature of the air, March, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	−46.4	−45.9	−48.0	−46.9	−46.1	−47.6	−47.2	−47.0	−48.3	−47.5	−45.1	−46.3	−43.0	−42.4
2	−37.9	−42.4	−42.3	−39.1	−37.4	−36.1	−34.8	−35.2	−35.4	−35.5	−34.4	−32.6	−30.9	−30.6
3	−36.1	−36.9	−36.8	−36.0	−30.1	−34.4	−36.6	−34.9	−39.0	−39.1	−39.7	−41.0	−36.4	−39.2
4	−35.7	−35.4	−35.1	−34.3	−33.9	−34.6	−34.9	−35.3	−33.8	−31.7	−30.6	−31.1	−32.4	−33.5
5	−38.1	−38.6	−37.1	−35.8	−37.4	−40.1	−33.6	−29.2	−36.0	−29.1	−28.6	−34.6	−35.2	−40.9
6	−40.1	−43.6	−44.6	−42.9	−38.1	−38.5	−36.4	−39.6	−35.3	−34.5	−31.4	−33.0	−30.6	−29.7
7	−8.8	−15.6	−12.6	−11.1	−21.2	−18.5	−28.8	−25.8	−26.5	−24.8	−27.9	−26.5	−26.1	−23.6
8	−16.8	−16.6	−15.7	−15.3	−13.6	−8.5	3.3	2.4	2.9	1.3	0.8	−2.1	−3.4	−3.4
9	−12.1	−12.5	−12.8	−13.1	−14.8	−17.9	−24.0	−19.0	−25.6	−24.5	−19.6	−27.4	−27.1	−28.6
10	−31.6	−31.1	−31.4	−30.8	−33.6	−32.6	−35.4	−31.8	−31.4	−34.5	−29.6	−26.5	−31.6	−33.1
11	−36.6	−36.3	−35.6	−33.8	−34.8	−35.2	−33.6	−35.0	−33.3	−34.6	−31.9	−32.9	−31.1	−31.2
12	−21.6	−22.1	−21.1	−20.2	−17.1	−17.9	−19.6	−20.2	−19.8	−19.8	−19.8	−17.3	−15.5	−16.2
13	−21.6	−23.6	−21.0	−22.6	−22.6	−22.6	−24.4	−25.1	−25.6	−25.1	−26.8	−26.1	−27.4	−26.6
14	−23.6	−20.6	−19.7	−19.1	−18.8	−18.2	−17.7	−17.4	−16.8	−15.9	−16.6	−15.5	−15.1	−14.4
15	12.4	12.1	7.5	12.2	6.9	8.3	7.4	5.5	7.0	6.2	3.6	1.8	−0.7	2.6
16	−14.6	−14.6	−16.0	−16.6	−16.0	−18.9	−18.3	−19.3	−17.1	−16.6	−17.1	−14.2	−14.2	−14.1
17	−19.1	−18.9	−17.9	−20.5	−19.1	−21.2	−19.0	−18.3	−16.3	−15.4	−11.1	−11.8	−8.7	−10.1
18	−16.2	−17.4	−14.4	−17.9	−17.0	−17.0	−17.0	−15.9	−17.6	−11.6	−11.7	−12.6	−12.1	−12.6
19	−15.3	−13.4	−17.0	−14.9	−14.3	−13.4	−10.2	−8.1	−5.4	−3.7	−4.6	0.5	−1.0	−2.6
20	−4.9	−7.0	−7.9	−7.2	−10.4	−6.9	−10.6	−10.2	−3.6	−3.4	−4.4	−6.8	−4.0	−5.2
21	−15.1	−14.1	−17.6	−14.6	−15.6	−16.1	−17.3	−13.3	−15.6	−14.6	−6.6	−13.6	−12.6	−6.8
22	−10.5	−10.5	−9.8	−8.8	−9.9	−9.5	−9.4	−9.1	−9.6	−7.9	−7.4	−7.5	−8.3	−8.4
23	−9.4	−9.9	−12.6	−10.6	−12.1	−13.8	−13.1	−12.6	−12.6	−12.1	−11.1	−3.5	−2.5	−2.5
24	−13.6	−15.6	−16.3	−20.4	−22.1	−22.6	−24.3	−23.5	−21.6	−23.9	−17.4	−21.9	−21.0	−20.9
25	−16.6	−16.6	−14.9	−15.6	−15.8	−14.6	−15.6	−16.8	−17.1	−14.5	−12.9	−12.1	−12.8	−11.5
26	−10.1	−9.6	−7.8	−4.4	−3.9	−1.8	−1.2	−1.2	−0.6	−1.2	−5.1	−7.6	−7.3	−6.1
27	−3.8	−3.6	−4.8	−5.1	−4.7	−2.4	−3.6	−2.6	−5.4	−6.1	−7.3	−6.1	−6.6	−7.6
28	−4.6	−4.1	−4.4	−4.2	−5.3	−5.3	−4.4	−2.6	−1.4	−3.1	−2.4	−1.3	−0.3	−0.6
29	−3.3	−3.9	−4.0	−3.7	−3.6	−2.9	−3.2	−2.4	−2.5	−1.1	−3.4	−3.4	−3.5	−3.5
30	−4.6	−4.4	−4.4	−4.5	−3.9	−3.4	−2.4	−3.6	−6.6	−4.2	−3.1	−5.3	−5.6	−5.9
31	−17.9	−15.6	−21.4	−22.4	−19.6	−18.6	−22.1	−20.0	−13.6	−17.0	−15.1	−0.9	−10.2	−12.1
Means	−18.5226	−18.9774	−18.9516	−18.7161	**−19.0935**	−18.8000	−18.9677	−18.2935	−18.1774	−17.5968	−16.3968	−16.4265	**−16.3742**	−17.1387
Means in centigrade	−28.06	−28.33	−28.33	−28.17	**−28.39**	−28.22	−28.33	−27.94	−27.89	−27.56	−26.89	−26.90	**−26.87**	−27.28

MARCH, 1883.

TABLE LXIII.—*Temperature of the air, March,* 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
—42.9	—42.1	—41.6	—40.4	—41.1	—42.3	—39.1	—39.6	—37.6	—41.6	**—44.0000**	—37.6[a]	**—49.1**	11.5	**—42.22**	1
—30.0	—29.6	—30.2	—31.2	—31.6	—31.3	—31.4	—34.1	34.6	—34.6	—34.3000	—29.6[a]	—42.5	12.9	—36.83	2
36.7	—38.9	—40.1	—38.1	—34.4	—36.6	—35.6	—34.6	—35.6	—36.6	—37.0583	—32.0	—43.0	11.0	—38.39	3
34.1	—33.2	—32.8	—34.8	—35.4	—35.6	—36.8	—36.4	—38.6	—39.1	—34.5458	—30.6[a]	—4●.7	10.1	—36.94	4
41.1	—39.2	—35.8	—39.1	—44.1	—42.6	—41.6	—40.2	—40.2	—40.2	—37.4333	—22.4	—45.0	22.6	—38.56	5
—27.4	—23.9	—23.6	—21.4	—20.7	—20.2	—19.1	—14.9	—12.6	—13.6	—29.8208	— 9.3	—46.7	37.4	—34.33	6
—23.1	—23.9	—23.6	—26.0	—25.1	—22.6	—19.2	—18.6	—19.2	—18.4	—21.5625	— 4.1	—28.8[a]	24.7	—29.78	7
— 3.6	— 3.4	— 5.8	— 5.6	— 7.7	— 8.7	— 9.6	—10.0	—11.5	—11.4	— 6.7500	9.9	—17.6	27.5	—21.56	8
28.6	—24.7	—30.6	—29.8	—33.5	—32.7	—32.6	—33.7	—32.5	—33.1	—24.6167	—10.5	—35.0	24.5	—31.44	9
33.4	—32.2	—33.9	—33.0	—35.4	—31.9	—33.1	—32.2	—35.2	—34.6	—32.4958	—26.5[a]	—36.8	10.3	—35.83	10
—30.5	—31.3	—28.1	—25.5	—25.1	—24.2	—23.9	—22.1	—22.2	—19.9	—30.3625	—19.9	—37.5	17.6	—34.67	11
15.4	—17.5	—18.2	—21.4	—18.4	—18.7	—22.3	—19.9	—20.6	—24.5	—19.3792	—12.5	—24.5[a]	12.0	—28.56	12
27.2	—25.1	—22.2	—22.5	—22.4	—23.1	—23.4	—24.3	—23.1	—24.3	—24.1125	—18.4	—28.8	10.4	—31.17	13
14.5	—14.3	—16.2	—14.8	—15.7	—14.1	1.4	8.4	7.4	16.6	—12.7166	**20.0**	—24.0	44.0	—24.83	14
1.7	— 2.5	— 1.1	— 2.5	— 5.6	— 4.9	— 5.7	— 8.8	—11.7	—13.8	**1.5792**	17.2	—13.8[a]	31.0	**—16.89**	15
—14.6	—15.1	—17.5	—18.6	—18.9	—18.3	—19.2	—20.7	—16.5	—19.1	—16.9375	— 6.0	—21.2	15.2	—27.17	16
—11.6	— 9.3	—10.2	—11.9	—14.6	—16.7	—15.1	—13.6	—17.1	—17.6	—15.2125	— 4.2	—21.9	17.7	—26.22	17
—10.0	—11.8	—15.2	—13.1	—11.6	—14.5	—14.1	—11.6	—10.4	—15.6	—14.1208	— 9.0	—19.6	10.6	—25.61	18
— 3.8	— 3.6	— 2.6	— 7.4	— 4.2	— 8.2	— 9.5	— 2.6	— 6.0	—11.5	— 7.6167	3.0	—19.6	22.6	—22.00	19
6.1	— 9.4	—11.8	—13.3	—14.6	—15.1	—13.4	—16.6	—12.6	—15.4	— 9.2000	0.0	—16.6[a]	16.6	—22.89	20
—10.8	—11.6	13.9	—15.1	—11.2	—14.6	—13.8	—15.1	—13.1	—12.6	—13.5542	— 6.6[a]	—19.1	12.5	—25.33	21
— 8.4	— 7.1	— 8.6	— 8.2	— 6.1	— 7.6	— 7.6	— 6.4	— 7.3	— 8.8	— 8.4458	— 3.5	—13.2	9.7	—22.44	22
— 2.5	— 2.7	— 3.9	— 4.3	— 4.4	— 6.6	— 7.6	— 8.8	— 9.6	— 9.6	— 8.2669	— 2.0	—15.1	13.1	—22.39	23
18.4	—19.7	—21.0	—21.9	—21.1	—19.6	—19.0	—17.1	—17.1	—17.6	—19.9000	—10.0	—25.4	15.4	—28.83	24
10.6	—11.5	—12.2	—12.9	—12.3	—12.6	—12.5	—11.7	—12.4	—12.0	—13.6708	— 7.3	—18.4	11.1	—25.39	25
— 5.1	— 2.5	— 1.6	— 4.2	— 7.8	— 7.0	— 4.6	— 5.5	— 4.5	— 3.8	— 4.7708	1.9	—12.9	14.8	—20.44	26
— 6.7	— 7.3	— 6.7	— 8.5	— 9.9	— 8.4	— 7.4	— 6.3	— 5.9	— 5.5	— 5.9292	— 1.3	—10.3	9.0	—21.06	27
1.8	— 2.4	— 2.3	— 2.1	— 2.3	— 2.2	— 2.8	— 2.9	— 2.9	— 2.8	— 2.8542	3.3	— 6.5	9.8	—19.39	28
— 1.1	— 1.6	— 1.6	— 1.3	— 2.1	— 3.8	— 4.7	— 4.0	— 4.5	— 4.3	— 3.0583	3.2	— 5.4	8.6	—19.50	29
— 6.5	— 6.1	— 9.0	—10.9	—11.9	—13.9	—12.0	—15.4	—12.9	—16.3	— 7.3667	0.5	—17.6	18.1	—21.89	30
13.0	—14.2	—16.6	—14.7	—16.9	—15.3	—22.1	—21.6	—21.2	—25.3	—16.9750	0.9[a]	—27.1	26.2	—27.22	31
-16.3806	-16.7000	-17.3709	-17.8871	-18.2613	-18.5129	-17.9806	-17.4484	-17.4774	-18.2871	—17.9170	— 7.91	—25.28	17.37	....	
—26.88	—27.06	—27.44	—27.72	—27.94	—28.06	—27.78	—27.44	—27.50	—27.94	—27.73	—22.14	—32.15	9.65	—27.73	

[a] From the observed hourly readings.

APRIL, 1883.

TABLE LXIV.—*Temperature of the air, April, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	−20.8	−27.1	−25.3	−26.2	−28.9	−27.2	−25.7	−27.6	−21.6	−19.6	−18.2	−19.0	−19.0	−17.8
2	−29.3	−29.2	−28.4	−26.9	−27.6	−27.9	−25.9	−25.2	−24.8	−24.6	−18.6	−20.8	−18.8	−20.6
3	−29.6	−29.9	−32.0	−35.6	−31.0	−33.1	−29.9	−30.0	−25.0	−23.1	−22.8	−24.6	−22.6	−24.5
4	−26.0	−26.0	−24.7	−24.4	−23.8	−21.9	−21.2	−18.4	−16.5	−15.4	−16.8	−17.0	−17.6	−17.4
5	−13.0	−12.1	−12.0	−11.5	−10.3	− 9.7	− 8.6	− 7.6	− 7.0	− 6.9	− 6.5	− 5.6	− 7.0	− 7.5
6	−14.9	−20.1	−23.0	−22.0	−19.5	−12.9	−15.8	−17.4	−11.9	−14.4	−13.6	−17.6	−16.4	−12.6
7	−21.4	−24.0	−17.0	−15.5	−18.9	−17.8	−18.6	−14.8	−12.4	−11.1	−10.1	−11.1	− 9.5	− 9.2
8	− 8.6	− 8.3	− 8.6	− 9.7	−10.0	− 9.9	−10.9	−10.6	−10.4	− 8.6	−10.6	− 8.9	− 6.6	− 9.4
9	−20.5	−21.7	−18.9	−19.1	−20.8	−23.8	−22.9	−18.1	−19.4	−17.9	−15.8	−17.2	−18.3	−16.1
10	−30.7	−26.6	−27.3	−25.8	−27.5	−25.4	−26.4	−24.3	−21.2	−20.9	−19.5	−19.7	−17.8	−15.4
11	−28.0	−29.9	−33.3	−32.1	−26.9	−22.6	−19.7	−20.6	−17.6	−20.8	−16.6	−17.6	−17.4	−14.8
12	−26.4	−25.3	−23.1	−25.8	−18.7	−18.8	−17.9	−18.5	−16.4	−16.6	−13.2	−12.7	−14.2	−14.2
13	−23.4	−25.7	−27.3	−25.9	−23.1	−22.1	−20.6	−22.5	−22.2	−17.2	−16.5	−18.4	−15.4	−14.3
14	−23.6	−22.4	−23.4	−24.7	−26.1	−24.6	−23.1	−19.1	−16.9	−16.5	−15.6	−16.1	−14.4	−17.3
15	−25.4	−24.0	−25.1	−23.0	−22.1	−23.2	−19.8	−19.7	−17.9	−18.6	−17.1	−14.8	−15.6	−12.9
16	−23.4	−23.3	−20.8	−23.5	−24.3	−25.1	−21.7	−19.3	−22.9	−18.5	−15.8	−16.7	−16.0	−15.1
17	−20.4	−23.9	−19.3	−23.7	−21.4	−19.1	−17.7	−14.9	−15.7	−13.6	−11.5	−14.2	−14.1	−10.1
18	−20.3	−26.6	−20.8	−23.4	−24.3	−24.4	−18.6	−16.9	−13.6	−16.5	−17.3	[illegible]	−12.4	−12.9
19	−11.0	−10.7	−10.4	−10.1	− 9.5	− 9.8	− 8.6	− 9.5	− 9.9	− 7.6	− 4.9	− 4.9	− 5.6	− 8.7
20	−21.6	−23.6	−20.1	−23.6	−19.8	−21.8	−16.8	−17.5	−17.0	−15.2	−14.1	−13.6	−12.2	−14.5
21	−25.7	−24.2	−25.2	−23.8	−20.4	−23.6	−22.4	−19.4	−20.6	−14.2	−13.9	− 9.1	− 3.9	− 8.6
22	−15.1	−13.4	−11.4	−14.3	−11.7	−11.3	− 8.7	− 6.7	− 7.0	− 5.7	− 4.4	− 6.6	0.2	− 3.6
23	−15.4	−19.9	−12.6	−15.8	−11.6	−12.1	−11.8	−10.4	−11.6	− 9.2	− 3.9	− 4.8	− 3.8	− 4.5
24	−17.2	−16.7	−17.1	−15.5	−13.7	−13.5	−10.4	− 9.4	− 6.6	− 5.1	− 1.8	− 2.0	− 2.6	− 0.3
25	−16.6	−15.4	−13.1	−13.8	−12.6	− 8.3	− 7.9	− 6.6	− 8.4	− 3.5	− 3.4	− 3.2	− 0.8	− 0.6
26	−12.7	−15.4	−13.5	−12.9	−17.4	−10.1	−12.5	− 9.4	− 6.2	− 7.8	− 5.3	− 3.4	− 5.8	− 6.1
27	−10.1	− 8.7	− 9.5	− 7.0	− 7.2	− 6.4	− 4.4	− 2.8	− 1.8	− 1.3	− 0.4	2.8	2.7	2.6
28	− 5.0	− 4.1	− 3.1	− 2.9	− 3.1	− 2.5	− 2.5	1.4	2.2	2.2	1.7	1.2	2.9	3.6
29	− 6.1	− 5.2	− 3.1	− 2.7	− 1.4	0.1	1.2	2.4	3.4	4.5	6.6	3.3	4.4	2.1
30	−13.6	−11.6	−11.6	−10.4	− 6.6	− 8.7	− 2.9	− 3.5	− 4.6	− 1.7	1.1	1.4	0.5	2.6
Means	−19.1933	−19.8333	−18.6900	−19.0533	−18.0067	−17.2500	−15.7567	−14.5633	−13.3833	−12.1800	−10.5267	−10.7833	− 9.9033	− 9.9367
Means in centigrade	−28.44	−28.78	−28.72	−28.39	−27.78	−27.33	−26.56	−25.89	−25.22	−24.56	−23.61	−23.78	−23.28	−23.30

APRIL, 1883.

TABLE LXIV.—*Temperature of the air, April,* 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
—16.8	—22.0	—18.1	—25.8	—23.7	—24.4	—24.8	—26.6	—24.6	—25.7	—23.062	—13.0	—29.7	16.7	—30.61	1
—19.6	—20.6	—24.4	—26.6	—26.6	—28.0	—28.1	—32.8	—33.7	—30.1	—25.796	—18.6[a]	—34.0	15.4	—32.11	2
—25.8	—21.9	—28.2	—29.6	—31.2	—29.3	—29.9	—29.6	—26.1	—23.6	**—27.871**	—21.9[a]	**—37.3**	15.4	**—33.28**	3
—17.8	—17.6	—18.6	—17.4	—17.8	—18.1	—17.6	—15.6	—15.4	—14.7	—19.071	—14.7[a]	—27.9	13.2	—28.39	4
— 6.5	— 9.8	—19.3	—10.9	—10.8	—12.8	[illegible]	—17.2	—19.2	—18.4	—10.554	— 5.6[a]	—19.8	14.2	—23.67	5
—13.6	—14.6	—18.6	—17.4	—18.8	—20.1	—17.8	—23.6	—19.6	—24.8	—17.542	—11.9[a]	—24.8[a]	12.9	—27.50	6
—10.2	—10.5	— 9.9	—10.1	— 9.8	— 9.6	— 9.2	— 8.5	— 8.6	— 8.6	—12.767	— 8.5[a]	—24.5	16.0	—24.89	7
— 8.8	—12.6	—13.8	—12.7	—15.5	—17.1	—20.0	—18.8	—23.4	—18.2	—12.167	— 6.6[a]	—23.4[a]	16.8	—24.56	8
—16.8	—16.6	—18.5	—16.3	—21.1	—25.1	—25.6	—27.5	—28.1	—29.8	—20.662	—15.8[a]	—30.1	14.3	—29.28	9
—18.5	—20.6	—17.7	—19.6	—24.6	—23.1	—26.4	—32.8	—27.4	—29.4	—23.692	—15.4[a]	—32.8	17.4	—30.94	10
—14.2	—17.3	—15.5	—17.4	—19.8	—24.1	—21.0	—22.2	—26.9	—23.1	—21.629	—14.2[a]	—33.8	19.6	—29.78	11
—14.3	—15.4	—15.6	—15.8	—18.6	—19.4	—20.1	—23.2	—24.1	—24.5	—18.867	—12.7[a]	—28.1	15.4	—28.28	12
—14.9	—16.0	—17.1	—18.9	—18.5	—21.6	—21.7	—24.1	—21.7	—24.1	—20.550	—14.3[a]	—28.2	13.9	—29.22	13
—17.6	—18.8	—18.1	—17.5	—19.1	—20.9	—21.0	—24.1	—16.1	—26.9	—20.579	—14.4[a]	—27.1	12.7	—29.22	14
—15.6	—15.9	—12.6	—19.4	—19.1	—18.8	—19.6	—21.0	—22.9	—24.6	—19.529	—12.6[a]	—27.0	14.4	—28.61	15
—14.0	—13.6	—14.7	—18.8	—17.9	—20.6	—17.7	—18.1	—20.0	—18.6	—19.183	—13.6[a]	—26.8	13.2	—28.44	16
—14.1	—13.6	—15.8	—16.1	—17.1	—17.6	—26.1	—25.1	—24.0	—20.9	—17.917	—10.1[a]	—25.2	15.1	—27.72	17
— 9.9	—11.9	—13.2	—12.6	—13.8	—12.8	—13.6	—12.1	—11.6	—11.1	—15.967	— 9.9[a]	—27.3	17.4	—26.67	18
— 5.1	— 7.6	— 8.8	— 9.0	—10.5	—12.8	—17.5	—20.0	—21.5	—17.6	—10.483	— 4.9[a]	—21.5[a]	16.6	—23.61	19
—12.0	—13.5	—13.6	—12.4	— 8.1	— 8.8	— 9.5	—19.9	—24.7	—26.4	—16.679	— 8.1[a]	—26.4	18.3	—27.06	20
—10.6	—11.5	—11.7	—10.5	—10.0	—11.7	—11.8	—12.6	—14.6	—13.8	—15.575	— 3.9[a]	—28.8	24.9	—26.44	21
— 6.6	— 6.3	— 4.9	— 5.6	— 7.4	— 8.1	— 8.6	—11.7	—15.0	—13.0	— 8.621	0.2[a]	—15.8	16.0	—22.56	22
— 6.3	— 7.0	— 7.0	— 7.4	— 6.6	— 9.3	— 9.1	—13.1	—13.5	—15.0	—10.071	— 3.8[a]	—19.9[a]	16.1	—23.39	23
— 1.0	— 2.1	— 3.6	— 4.6	— 4.6	— 8.9	— 5.6	—11.9	— 8.1	—12.1	— 8.100	— 0.3[a]	—18.8	18.5	—22.28	24
— 2.2	— 3.1	— 3.5	— 4.1	— 3.6	— 7.1	—10.4	— 8.8	—15.4	—12.9	— 7.729	— 0.6[a]	—17.9	17.3	—22.06	25
— 4.9	— 6.1	— 5.5	— 7.8	— 6.6	— 6.9	— 6.4	— 7.6	— 8.7	—10.0	— 8.708	— 3.4[a]	—17.4	14.0	—22.61	26
3.7	1.5	0.0	— 2.0	— 4.0	— 4.8	— 5.1	— 5.5	— 6.4	— 5.3	— 3.308	3.7[a]	—10.8	14.5	—19.61	27
3.4	1.0	1.5	— 1.4	— 5.0	— 1.4	— 2.0	— 2.1	— 5.4	— 8.5	— 1.162	3.6[a]	— 8.8	12.4	—18.44	28
2.4	2.7	0.5	— 1.6	— 4.4	— 5.0	— 5.0	— 5.4	—11.5	— 9.4	**— 1.133**	**6.6**[a]	—12.5	19.1	**—18.39**	29
1.4	1.1	— 1.9	— 0.1	— 1.2	— 5.3	— 5.6	— 7.5	— 6.0	— 8.9	— 4.317	2.6[a]	—14.4	17.0	—20.17	30
—10.2269	—11.3467	—11.9400	—12.9800	—13.8600	—15.1167	—15.6633	—17.6333	—18.4733	—18.3333	—14.7764	— 8.07	—24.03	15.96	....	
—23.44	—24.06	—24.39	—25.00	—25.50	—26.17	—26.50	—27.56	—28.06	—27.94	—25.99	—22.26	—31.13	8.87	—25.99	

[a] From the observed hourly readings.

MAY, 1883.

TABLE LXV.—*Temperature of the air, May, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	−11.9	− 9.8	−10.4	− 7.9	− 8.4	− 7.8	− 7.6	− 2.0	− 1.7	− 0.6	0.7	1.8	0.0	2.2
2	− 5.8	− 4.8	− 6.4	− 4.1	− 1.8	− 2.1	− 2.6	0.3	2.4	0.4	3.1	2.6	3.2	1.9
3	− 9.9	−10.4	− 8.1	− 8.0	− 7.6	− 6.6	− 2.6	− 4.0	− 5.1	− 2.4	− 1.1	− 0.6	0.6	− 0.6
4	−10.3	−10.9	−11.5	− 9.5	− 8.8	− 8.9	− 5.6	− 9.3	− 4.1	− 2.7	− 0.1	− 1.4	0.6	0.5
5	−10.1	− 8.9	− 9.1	− 9.7	− 7.7	− 5.5	− 3.9	− 3.1	− 0.6	0.1	4.4	3.2	6.4	3.9
6	− 3.8	− 4.6	− 6.6	− 7.5	− 3.8	− 3.5	− 2.6	0.1	2.2	3.1	4.4	5.6	5.9	7.5
7	− 1.3	− 1.8	− 1.0	− 1.2	1.9	5.3	8.1	5.0	5.2	8.4	12.2	12.0	12.4	12.1
8	1.0	− 0.5	1.0	1.7	0.5	1.7	4.6	5.8	7.4	7.7	8.6	11.2	12.4	10.7
9	7.5	6.4	8.1	6.1	4.4	10.1	7.4	8.4	11.0	13.6	15.1	15.8	15.0	16.4
10	7.4	7.6	6.4	8.4	8.9	7.3	10.4	13.2	12.6	11.0	13.9	16.6	17.0	17.1
11	8.6	9.2	11.7	14.2	14.6	15.7	17.2	18.0	19.7	21.4	20.2	22.6	23.0	23.4
12	9.4	9.6	7.2	9.9	11.3	13.2	14.5	16.1	17.4	16.6	18.4	20.3	20.1	20.7
13	19.4	19.9	21.4	22.7	23.6	24.4	27.4	28.2	26.2	26.7	27.5	25.8	26.3	27.4
14	25.6	25.6	24.4	25.9	26.8	25.6	24.6	25.1	25.2	24.4	24.4	24.2	23.9	23.8
15	11.2	11.4	12.6	12.5	12.5	13.4	13.9	14.5	14.9	14.2	15.7	14.8	14.0	14.6
16	13.3	13.6	13.7	14.1	14.4	15.4	16.2	17.4	18.6	19.2	20.6	19.5	20.0	20.6
17	11.0	9.9	8.6	5.9	8.1	8.9	10.5	9.9	13.9	14.7	14.0	17.6	15.0	15.7
18	5.5	5.9	7.0	8.7	6.9	8.5	14.3	13.3	12.2	18.1	17.6	18.1	19.3	19.5
19	8.9	9.2	10.4	10.9	11.6	15.9	13.9	16.0	18.0	15.4	18.3	20.2	20.8	19.6
20	18.0	18.6	17.4	19.5	19.6	19.5	21.3	20.9	25.2	24.9	24.9	25.5	24.4	25.2
21	17.9	18.6	18.7	20.5	20.9	22.7	26.2	26.4	27.1	27.2	30.8	29.6	27.6	28.4
22	25.7	23.4	25.4	23.4	27.3	27.5	27.9	28.2	30.2	30.3	29.3	31.8	29.9	32.3
23	18.9	17.4	18.6	15.4	21.7	20.6	21.5	25.7	26.2	24.3	26.4	26.3	26.4	27.7
24	25.2	25.2	26.2	25.2	25.4	25.7	27.4	27.7	27.7	28.9	28.4	29.1	27.6	28.8
25	23.5	23.9	23.9	21.6	22.4	22.4	24.5	24.8	27.5	25.9	26.5	26.1	23.9	24.4
26	22.6	19.7	19.9	21.0	20.9	21.9	23.0	22.5	21.8	23.4	22.6	23.2	22.7	23.0
27	19.1	19.9	20.9	20.6	21.0	21.2	21.6	20.6	22.5	23.4	23.4	24.0	24.5	24.0
28	24.2	24.4	21.9	20.9	21.7	20.7	20.4	20.5	22.4	23.2	22.4	25.3	22.2	21.3
29	16.4	17.7	15.2	17.7	14.6	17.8	18.1	19.2	21.2	21.9	21.5	20.1	22.8	23.9
30	22.6	22.1	22.7	22.5	22.4	23.1	23.9	24.4	25.4	25.6	26.2	26.2	26.5	26.5
31	24.8	24.0	21.9	22.4	23.5	27.2	30.4	27.9	26.4	26.5	27.4	26.5	26.8	26.4
Means	10.7935	**10.6935**	10.6968	11.0903	11.8968	12.9452	14.3323	14.8935	16.0968	16.6065	17.6677	18.1806	18.1419	18.3516
Means in centigrade	−11.78	**−11.82**	−11.83	−11.61	−11.17	−16.61	−9.83	−9.50	−8.83	−8.56	−7.94	−7.67	−7.72	−7.58

MAY, 1883.

TABLE LXV.—*Temperature of the air, May, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
3.2	3.4	2.9	2.6	−2.4	−1.1	0.3	−1.2	−2.4	−4.0	−2.588	3.4[a]	**−13.0**	16.4	−19.22	1
2.2	−0.2	−0.3	0.7	−2.8	−3.1	−4.0	−7.6	−6.8	−8.6	−1.842	3.2[a]	−9.0	12.2	−18.78	2
−1.8	−3.6	−2.9	−4.3	−5.6	−8.1	−7.7	−7.6	−12.6	−8.7	**−5.388**	0.6[a]	−12.7	13.3	**−20.78**	3
0.2	−2.9	−0.4	−1.5	−2.4	−5.8	−5.8	−6.9	−9.7	−11.7	−5.371	0.6[a]	−12.2	12.8	−20.76	4
4.2	2.0	1.7	3.3	−0.6	−1.4	−1.6	−4.4	−4.8	−6.6	−2.033	6.4[a]	−12.7	19.1	−18.89	5
5.6	4.4	6.1	3.4	6.6	3.3	−0.6	0.5	1.4	−2.2	1.038	7.5[a]	−8.8	16.3	−17.00	6
15.6	12.8	11.7	11.1	7.9	8.2	7.3	7.7	3.7	1.9	6.883	15.6[a]	−4.5	20.1	−13.94	7
13.4	11.9	10.0	10.5	10.5	9.1	9.4	9.8	8.2	8.4	7.292	13.4[a]	−0.5[a]	13.9	−13.72	8
14.2	15.6	16.7	17.0	15.6	12.7	13.9	7.4	7.6	8.7	11.462	17.0[a]	4.1	12.9	−11.39	9
17.6	16.5	18.0	16.6	13.4	13.2	13.4	11.6	11.0	9.8	12.454	18.0[a]	6.4	11.6	−10.83	10
23.4	19.4	17.1	16.2	16.4	14.1	10.9	8.9	8.4	10.2	16.021	23.4[a]	8.3	15.1	−8.89	11
20.6	21.9	18.4	21.0	16.7	17.4	14.7	12.4	14.4	17.5	15.821	21.9[a]	7.2[a]	14.7	−9.00	12
27.6	26.3	27.3	27.6	26.7	26.9	26.4	26.1	25.7	25.4	25.538	28.2[a]	16.8	11.4	−3.61	13
23.8	23.5	21.6	19.7	17.5	16.1	14.5	13.0	11.9	11.8	21.788	26.8[a]	11.0	15.8	−5.67	14
14.7	14.9	14.6	14.8	14.9	14.6	14.9	14.6	14.5	14.4	14.079	15.7[a]	10.6	5.1	−9.94	15
20.2	20.6	19.1	18.0	16.5	18.1	13.5	10.5	11.9	9.9	16.454	20.6[a]	9.9[a]	10.7	−8.61	16
14.6	14.7	16.4	17.3	14.4	11.6	12.1	12.3	5.3	7.1	12.062	17.6[a]	5.3[a]	12.3	−11.06	17
18.6	17.4	19.2	16.6	16.3	15.4	12.3	12.4	10.5	8.4	13.417	19.5[a]	3.1	16.4	−10.33	18
21.6	19.7	17.4	19.2	19.2	17.4	18.4	18.5	17.9	18.2	16.521	21.6[a]	6.0	15.6	−8.61	19
26.4	23.9	24.5	22.8	24.4	21.9	17.2	17.8	18.6	16.7	21.629	26.4[a]	16.7[a]	9.7	−5.78	20
27.6	28.2	27.7	26.8	27.6	26.4	27.1	25.5	24.7	24.6	25.367	30.8[a]	16.7[a]	14.1	−3.67	21
29.8	29.2	28.4	28.1	27.0	23.2	23.1	20.4	20.4	18.2	**26.683**	**32.3**[a]	18.2[a]	14.1	**−2.94**	22
26.5	27.1	26.2	26.0	24.3	24.5	24.9	25.0	24.2	24.4	23.758	27.7[a]	17.4[a]	10.3	−4.56	23
26.7	27.9	27.1	25.4	25.3	24.2	23.9	24.7	24.7	22.5	26.288	29.1[a]	22.5[a]	6.6	−3.17	24
23.4	22.5	23.3	23.4	22.5	22.8	21.9	21.4	21.1	20.6	23.488	27.5[a]	20.0	7.5	−4.72	25
22.7	23.0	21.7	21.6	20.4	20.0	19.3	18.5	18.9	19.6	21.412	23.4[a]	18.1	5.3	−5.89	26
24.4	24.4	24.4	24.3	23.9	24.2	23.6	24.2	23.7	23.4	22.800	24.5[a]	19.1[a]	5.4	−5.11	27
27.4	25.5	23.6	23.2	23.6	21.6	19.5	17.3	17.7	14.7	21.900	27.4[a]	14.7[a]	12.7	−5.61	28
23.7	23.0	23.2	23.2	21.4	22.2	22.2	21.2	22.7	22.3	20.550	23.9[a]	14.6	9.3	−6.33	29
27.4	28.1	28.7	29.4	28.4	26.3	27.2	23.2	24.4	22.7	25.246	29.4[a]	21.5	7.9	−3.78	30
25.9	26.6	25.7	25.5	25.7	25.7	25.6	25.4	24.6	25.0	25.742	30.4[a]	21.2	9.2	−3.50	31
18.4323	17.6645	17.3903	17.0806	15.9129	14.8903	14.1226	12.9871	12.3161	11.7613	14.7894	19.80	7.61	12.19	....	
−7.54	−7.94	−8.11	−8.28	−8.94	−9.50	−9.94	−10.56	−10.39	−11.22	−9.55	−6.76	−13.55	6.77	−9.55	

[a] From the observed hourly readings.

JUNE, 1883.

TABLE LXVI.—*Temperature of the air, June, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
1	24.1	24.4	24.5	25.0	24.2	26.5	29.4	27.3	27.0	26.2	26.9	27.1	26.5	26.1
2	23.9	24.1	23.0	25.2	24.0	24.9	24.4	25.3	27.4	27.2	27.3	29.7	30.4	30.7
3	30.8	31.6	31.1	30.7	34.9	33.9	34.5	34.1	32.3	35.1	38.2	38.6	36.4	35.4
4	27.2	29.9	27.4	29.4	30.4	30.9	30.9	33.4	36.6	33.4	32.5	35.3	35.3	34.9
5	30.7	29.4	27.4	27.6	28.2	28.6	29.9	30.3	31.2	30.7	31.4	31.2	30.3	30.3
6	27.1	27.5	27.9	27.5	28.5	28.4	29.4	30.5	30.4	31.4	33.4	35.5	34.8	35.1
7	28.4	28.0	28.4	27.5	28.0	28.0	28.0	28.1	28.3	27.7	28.6	28.7	29.4	29.2
8	26.7	26.6	27.2	26.7	27.3	29.2	31.5	30.2	30.9	33.9	33.9	32.4	34.1	33.4
9	28.5	25.7	27.4	27.4	29.2	29.7	30.5	28.8	32.0	32.4	32.4	32.9	32.9	33.9
10	25.3	25.5	25.5	25.6	25.9	26.2	27.1	26.4	27.6	28.8	29.1	29.3	30.3	28.6
11	29.2	29.0	29.1	29.0	30.4	31.0	31.9	32.8	32.2	32.1	31.4	31.7	31.9	31.1
12	29.0	29.3	28.6	28.9	28.5	28.6	28.6	28.9	28.8	29.7	29.7	30.1	30.5	30.0
13	28.6	29.2	30.5	31.5	33.4	35.5	35.6	35.2	34.4	32.4	33.7	33.4	35.4	36.3
14	34.3	33.4	33.2	33.2	33.2	34.0	34.0	35.1	36.4	37.6	35.1	35.0	34.6	35.6
15	31.5	31.3	31.1	30.6	30.5	31.4	31.8	32.6	32.4	31.4	31.5	31.8	31.3	31.5
16	26.4	26.5	26.5	27.9	28.1	29.7	31.7	30.7	31.3	34.4	34.4	34.9	35.5	35.6
17	32.4	32.2	30.7	31.7	32.0	32.6	32.2	34.4	35.5	35.6	38.3	39.2	39.5	38.4
18	31.5	30.9	32.1	33.5	30.7	31.2	34.4	34.4	34.5	35.1	35.4	37.0	36.2	36.4
19	31.4	30.8	29.9	30.3	31.4	31.1	31.1	32.2	33.0	32.4	32.2	31.7	31.4	32.3
20	32.5	32.8	32.4	32.2	32.4	32.3	33.5	32.9	33.5	34.5	34.9	37.3	37.2	38.4
21	34.1	35.4	34.5	34.7	34.9	34.6	33.9	34.1	35.5	36.1	35.5	36.3	36.3	37.5
22	31.7	31.4	31.5	30.8	31.4	31.5	32.1	32.5	35.0	34.7	35.3	37.0	37.5	38.3
23	32.5	32.9	33.2	33.2	34.0	34.4	34.2	34.4	34.4	34.5	34.8	36.0	35.1	35.9
24	35.2	35.4	36.1	35.4	36.3	34.8	35.5	35.2	37.1	37.8	37.6	36.4	37.3	38.7
25	32.1	31.9	31.7	32.6	32.5	31.7	33.6	34.1	33.5	34.8	37.5	37.6	35.4	34.4
26	32.6	33.9	34.1	33.7	33.6	33.7	35.1	34.5	35.3	35.6	35.4	35.0	35.5	35.5
27	33.1	34.3	33.7	33.6	34.2	34.6	34.7	34.5	35.0	35.4	35.5	35.4	36.5	37.9
28	33.9	34.2	33.8	33.8	34.7	33.8	34.5	35.0	35.4	34.5	35.1	34.9	36.6	36.9
29	34.9	35.0	34.8	36.1	36.9	36.4	36.9	37.1	36.9	37.1	38.2	37.2	37.4	36.5
30	31.4	31.4	31.4	32.1	32.4	32.5	33.4	33.8	33.5	33.9	34.5	34.9	36.9	36.6
Means	30.3667	30.4633	**30.2900**	30.5833	31.0700	31.3900	32.1433	32.2933	32.9100	33.2333	33.6567	34.1167	34.2800	34.3800
Means in centigrade	−0.89	−0.83	**−0.94**	−0.78	−0.50	−0.33	0.06	0.17	0.50	0.67	0.94	1.17	1.28	1.33

JUNE, 1883.

TABLE LXVI.—*Temperature of the air, June, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
27.2	26.2	26.0	26.1	26.2	26.1	25.5	24.8	24.9	25.7	**25.992**	29.4[a]	23.2	6.2	**−3.33**	1
27.6	33.4	35.2	35.4	32.2	31.3	31.2	30.7	31.8	30.4	28.612	35.4[a]	**22.7**	12.7	−1.89	2
37.2	38.3	38.0	35.6	37.4	35.9	34.7	35.5	31.9	29.4	34.646	38.6[a]	29.4[a]	9.2	1.44	3
37.3	36.2	34.4	32.5	32.9	30.5	30.9	29.7	29.9	28.0	32.038	37.3[a]	27.2[a]	10.1	0.00	4
29.4	29.6	28.8	28.7	29.0	28.4	27.8	27.9	27.2	25.9	29.162	31.4[a]	25.9	5.5	−1.56	5
34.7	34.5	33.3	32.1	31.6	31.5	31.2	29.7	29.2	28.7	30.996	35.5[a]	26.4	9.1	−0.56	6
28.9	28.6	28.9	28.1	28.7	27.3	26.9	26.4	26.5	26.7	28.054	29.4[a]	25.6	3.8	−2.17	7
36.2	31.5	31.2	31.3	32.1	32.1	31.5	30.7	29.6	30.4	30.858	36.2[a]	26.3	9.9	−0.61	8
33.6	33.6	32.5	30.2	29.2	31.6	28.5	27.4	26.6	25.6	30.108	33.9[a]	25.6[a]	8.3	−1.06	9
30.4	30.4	30.4	30.1	28.7	29.1	28.5	30.6	29.4	29.4	28.258	30.6[a]	24.9	5.7	−2.06	10
30.6	30.6	31.4	31.5	30.7	29.5	29.6	29.4	29.0	28.6	30.571	32.8[a]	28.4	4.4	−0.78	11
30.5	30.5	30.4	30.5	30.1	30.2	29.2	28.6	27.2	26.9	29.304	30.5[a]	26.7	3.8	−1.50	12
34.4	34.4	35.1	35.4	35.0	34.4	35.0	33.6	33.1	32.7	33.675	36.3[a]	27.1	9.2	0.94	13
37.0	34.6	35.3	35.4	35.1	35.1	34.4	34.1	34.2	34.2	34.754	37.6[a]	31.8	5.8	1.56	14
31.8	34.1	33.7	34.3	34.4	33.4	30.2	29.9	29.9	27.4	31.658	34.4[a]	27.4[a]	7.0	−0.17	15
37.0	36.0	34.2	33.9	34.0	32.6	32.4	31.4	31.4	30.7	31.967	37.0[a]	26.2	10.8	0.00	16
38.9	38.4	37.8	38.4	39.6	35.2	34.6	33.5	33.4	32.0	35.271	**39.6**[a]	30.5	9.1	1.83	17
36.0	36.4	34.7	36.0	34.4	34.2	31.7	[illegible]	30.8	31.2	33.754	37.0[a]	30.0	7.0	1.00	18
32.1	31.4	32.3	32.0	32.6	32.6	31.4	31.6	32.1	32.1	31.725	33.0[a]	29.8	3.2	−0.17	19
37.8	36.9	35.6	35.2	35.6	35.5	[illegible]	34.5	34.4	35.0	34.704	38.4[a]	31.3	[illegible]	1.50	20
36.5	38.7	38.6	35.8	35.6	35.6	35.4	34.9	33.9	31.6	35.417	38.7[a]	31.5	7.2	1.89	21
37.5	35.3	35.0	34.7	33.5	32.5	32.5	32.7	33.0	33.4	33.783	38.3[a]	30.6	7.7	1.00	22
36.9	35.6	38.9	37.3	37.1	37.6	37.2	36.9	35.7	36.1	35.367	38.9[a]	32.4	6.5	1.89	23
38.1	38.0	37.6	37.6	31.7	32.5	32.0	32.5	31.6	31.7	**35.504**	38.7[a]	31.6	7.1	**1.94**	24
34.5	33.7	33.0	33.2	32.6	31.7	31.7	32.6	32.9	33.2	33.438	37.6[a]	30.3	7.3	0.78	25
35.3	35.9	35.6	35.3	35.6	36.0	34.3	34.4	33.7	33.4	34.708	36.0[a]	32.6[a]	3.4	1.50	26
37.5	35.3	35.6	35.2	34.6	34.4	34.1	33.9	33.1	33.5	34.817	37.9[a]	33.1	4.8	1.56	27
36.6	36.2	36.5	35.3	34.9	34.4	33.9	33.0	32.6	32.4	34.704	36.9[a]	32.2	4.7	1.50	28
36.6	36.8	33.5	32.6	33.2	32.6	32.1	31.9	32.4	32.2	35.221	38.2[a]	31.9	6.3	1.78	29
36.1	37.2	35.0	35.0	35.4	33.6	32.4	32.4	32.9	31.2	33.746	37.2[a]	31.2	6.0	0.94	30
34.4733	34.2767	33.9500	33.4900	33.1200	32.5800	31.8800	31.5533	31.1133	30.6567	32.4271	35.8	28.8	7.0	--------	
1.39	1.28	1.11	0.83	0.61	0.33	−0.06	−0.22	−0.50	−0.72	0.24	2.06	−1.78	3.88	0.24	

[a] From the observed hourly readings.

JULY, 1883.

TABLE LXVII.—*Temperature of the air, July, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	31.1	30.3	30.9	30.9	30.6	30.7	31.4	31.2	32.2	33.2	32.3	32.3	32.0	31.3
2	33.7	32.9	33.7	34.1	34.7	35.4	36.4	34.4	36.2	37.4	38.9	39.8	37.9	40.6
3	32.4	34.0	33.5	33.7	33.6	34.7	34.7	34.5	35.6	37.7	37.4	36.9	36.7	36.9
4	32.4	30.4	30.9	30.6	31.3	32.6	32.9	35.2	34.7	34.7	34.0	33.9	34.5	34.5
5	32.0	31.4	31.3	31.4	31.6	31.7	32.5	34.2	34.9	35.4	35.4	35.5	36.4	37.1
6	30.5	29.6	29.7	29.9	29.6	30.7	31.4	31.3	31.7	31.2	30.9	32.1	31.6	31.4
7	31.6	32.1	32.1	33.2	32.7	33.7	33.9	32.9	33.4	33.1	35.4	38.1	36.4	37.4
8	40.3	39.6	41.4	39.5	39.6	38.5	40.4	37.6	38.7	37.6	39.5	37.4	41.2	40.7
9	35.6	35.0	34.7	34.8	34.7	35.5	36.2	37.2	37.4	37.9	38.4	[illegible]	41.3	39.6
10	31.0	31.6	30.6	31.2	31.2	32.7	32.5	33.5	34.6	34.4	33.9	33.9	34.9	36.6
11	30.9	30.2	30.4	32.2	32.2	32.2	32.4	35.3	35.6	35.9	36.9	37.8	38.2	39.4
12	34.6	32.6	33.3	33.7	34.9	35.9	35.9	36.2	37.6	37.2	39.4	41.7	43.6	51.0
13	39.4	38.6	37.6	37.4	39.1	39.1	39.9	39.6	38.6	39.8	39.0	38.1	38.6	37.4
14	34.2	34.6	34.4	34.9	34.8	34.4	35.1	35.4	34.2	34.7	35.1	35.9	35.5	35.0
15	33.6	33.6	33.9	34.1	34.1	36.3	37.4	37.9	36.2	36.4	36.6	37.0	38.1	40.3
16	40.6	41.6	42.1	41.5	42.1	40.4	40.3	41.4	43.4	40.9	39.3	39.8	39.7	40.6
17	43.3	44.0	44.2	42.6	44.3	44.5	44.0	43.9	43.9	47.4	48.2	46.2	47.5	43.1
18	36.2	39.6	38.6	40.7	40.0	38.0	39.1	39.4	37.6	38.1	40.1	45.4	45.9	45.0
19	40.0	41.1	40.9	41.6	40.5	42.7	40.2	38.4	38.3	39.7	39.1	37.0	36.9	40.1
20	39.2	38.6	38.2	38.4	37.1	37.9	38.0	40.4	38.7	49.7	50.1	49.9	49.2	48.6
21	33.4	33.1	34.7	34.6	34.2	35.5	35.2	37.1	38.4	39.0	38.4	38.8	39.4	40.1
22	36.1	36.3	35.5	35.5	38.[illegible]	37.8	40.4	42.4	44.6	44.5	43.7	45.9	44.6	45.4
23	36.6	36.9	36.4	36.9	36.2	36.4	35.0	35.0	35.1	35.2	35.4	36.4	37.5	36.6
24	33.9	34.5	34.7	34.9	36.1	35.9	36.6	36.6	38.2	38.4	40.3	39.4	37.6	37.1
25	33.6	33.6	33.9	33.7	36.3	34.7	33.5	35.4	34.2	34.6	34.4	34.9	34.6	33.9
26	31.2	31.2	31.4	31.5	31.7	32.9	33.2	34.2	34.2	34.2	33.6	33.9	33.9	34.5
27	34.4	34.5	34.0	34.2	34.4	34.8	35.9	36.9	37.2	38.3	34.7	35.3	35.9	35.6
28	33.2	32.5	32.5	31.9	32.0	33.2	33.5	33.4	32.6	33.8	35.3	36.4	36.5	37.4
29	30.6	30.2	31.8	31.3	32.4	31.6	34.2	34.3	35.2	34.4	34.2	35.7	34.5	37.4
30	41.2	41.7	41.6	41.9	42.1	42.4	41.9	42.0	41.9	39.8	41.4	45.4	45.2	45.5
31	42.5	43.4	42.4	43.4	40.8	43.5	44.0	46.1	45.9	47.2	46.7	46.3	47.1	46.4
Means	35.168	**35.139**	35.203	35.361	35.581	36.010	36.387	36.881	37.129	37.800	38.000	38.590	38.803	**39.242**
Means in centigrade	1.78	**1.72**	1.78	1.89	2.00	2.22	2.44	2.72	2.83	3.22	3.33	3.67	3.78	**4.02**

JULY, 1883.

TABLE LXVII.—*Temperature of the air, July, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
32.2	32.5	33.3	33.5	34.2	34.4	34.3	34.2	33.9	34.2	32.379	34.4[a]	29.4	5.0	0.22	1
38.4	40.4	38.3	41.2	39.4	37.8	38.0	36.1	34.2	35.0	36.871	41.2[a]	32.5	8.7	2.72	2
36.1	37.9	36.0	36.9	34.0	35.3	34.8	34.2	34.3	31.2	35.125	37.9[a]	30.9	7.0	1.72	3
36.2	[37.4]	38.5	38.9	37.2	36.9	33.9	33.4	31.9	32.0	34.092	38.9[a]	30.2	8.7	1.17	4
37.4	37.4	36.3	37.3	36.4	35.5	34.4	32.3	31.1	31.9	34.200	37.4[a]	30.9	6.5	1.22	5
31.2	31.6	32.3	33.5	32.9	32.4	31.6	31.3	31.5	32.4	**31.346**	33.5[a]	**28.8**	4.7	**−0.39**	6
40.5	41.5	41.8	41.4	43.4	44.0	44.2	43.4	43.3	40.6	37.504	44.9[b]	31.4	13.5	3.06	7
40.4	40.7	41.3	40.8	42.3	37.6	39.2	37.0	35.7	34.9	39.246	42.3[a]	31.9[a]	7.4	4.00	8
39.5	39.4	39.2	39.3	37.6	37.9	36.3	35.0	32.5	32.3	36.938	41.3[a]	31.8	9.5	2.72	9
35.3	34.1	37.0	35.2	34.6	35.4	33.7	31.4	30.3	29.7	33.342	37.0[a]	29.4	7.6	0.72	10
39.4	39.0	39.3	36.6	35.5	37.4	36.6	35.7	33.4	33.1	35.233	39.4[a]	29.4	10.0	1.78	11
49.6	49.4	50.6	48.5	47.6	45.5	47.7	49.2	39.7	38.4	41.408	52.4[c]	32.3	20.1	5.22	12
37.4	37.8	35.9	35.4	35.4	35.0	34.9	35.2	34.5	34.2	37.412	39.9[a]	34.0	5.9	3.00	13
34.9	34.4	34.6	34.2	33.8	33.9	33.7	33.5	33.7	33.6	34.521	35.9[a]	32.8	3.1	1.39	14
41.5	39.4	38.1	42.5	41.5	39.9	39.9	40.8	40.7	39.5	37.888	42.5[a]	33.0	9.5	3.28	15
44.4	44.7	44.4	42.4	44.2	43.7	43.8	44.7	44.6	43.7	42.262	44.7[a]	36.8	7.9	5.72	16
39.0	36.4	37.4	36.9	36.6	35.4	36.1	36.4	36.9	36.3	41.438	48.2[a]	35.2	13.0	5.22	17
43.2	43.4	43.4	41.0	41.5	41.6	42.1	41.4	41.4	39.5	40.925	45.9[a]	35.7	10.2	4.94	18
39.3	41.7	42.0	41.0	39.1	40.1	41.1	41.4	37.5	41.2	40.038	42.7[a]	35.4	7.3	4.44	19
48.4	49.2	48.8	39.6	38.6	36.9	36.4	34.8	35.4	35.0	41.546	50.1[a]	34.0	16.1	5.28	20
37.6	38.6	38.5	37.5	36.4	36.3	35.9	35.6	34.4	34.2	36.538	40.1[a]	33.1	7.0	2.50	21
46.2	41.7	41.9	40.9	41.9	39.8	38.1	37.6	37.2	36.5	40.525	46,2[a]	34.1	12.1	4.72	22
37.2	38.1	37.6	36.7	36.4	35.7	35.2	34.7	34.8	34.7	36.112	38.1[a]	34.2	3.9	2.28	23
36.9	36.2	35.1	35.6	35.5	35.4	35.0	35.2	34.8	34.7	36.192	40.3[a]	33.8	6.5	2.33	24
33.5	33.8	33.5	32.6	31.9	31.8	31.7	31.4	31.2	31.2	33.496	35.4[a]	31.0	4.4	0.83	25
35.1	35.4	34.6	33.9	33.6	34.4	36.6	34.8	34.9	34.3	33.717	36.6[a]	31.0	5.6	0.94	26
35.9	35.5	35.6	35.1	36.6	35.7	35.2	34.9	34.4	34.0	35.375	38.3[a]	33.2	5.1	1.89	27
37.4	37.2	37.7	37.1	35.2	35.7	33.9	32.1	32.4	31.4	34.346	37.7[a]	30.9	6.8	1.28	28
36.6	36.4	36.1	36.0	36.8	36.6	36.9	40.4	40.6	41.4	35.233	41.4[a]	29.3	12.1	1.78	29
43.3	45.5	45.2	43.5	41.2	43.4	41.9	42.6	41.5	42.9	42.708	45.5[a]	39.2	6.3	5.94	30
45.2	48.4	47.7	46.1	47.1	44.1	40.6	43.2	42.7	42.2	**44.708**	**48.4**[a]	40.3	8.1	**7.06**	31
39.006	39.197	39.097	38.423	38.013	37.597	37.194	36.900	35.981	35.684	37.1827	41.3	32.9	8.4	--------	
3.89	4.00	3.94	3.56	3.33	3.11	2.89	2.72	2.22	2.06	2.87	5.14	0.40	4.67	2.87	

[a] From the observed hourly readings. [b] Observed 8.16 p. m. [c] Observed 5 [illegible]

AUGUST, 1883.

Table LXVIII.—*Temperature of the air, August, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1	40.1	38.7	39.4	39.7	39.3	39.7	39.5	40.4	41.2	39.7	40.4	41.9	39.4	41.2
2	33.5	35.0	35.0	34.2	34.4	35.1	34.7	34.3	32.6	33.4	33.6	34.6	34.2	33.9
3	31.4	31.4	32.4	32.4	32.2	33.2	33.2	33.4	34.4	34.9	36.2	37.2	39.2	37.8
4	33.6	33.9	33.4	33.4	33.5	33.4	33.1	33.5	33.6	33.8	33.5	34.2	34.2	34.8
5	32.2	32.2	31.5	31.9	31.4	32.3	32.4	32.2	33.0	33.2	33.4	35.2	35.4	35.6
6	33.2	33.4	34.2	34.4	33.8	36.0	32.4	36.0	36.9	36.5	37.0	37.2	38.9	37.0
7	30.9	30.7	30.6	30.9	30.8	31.6	32.4	34.0	34.9	34.4	36.0	35.3	34.7	34.4
8	33.9	35.0	39.0	37.7	38.1	37.6	35.9	36.6	38.1	39.5	40.9	39.9	38.9	40.4

AUGUST, 1883.

TABLE LXVIII.—*Temperature of the air, August,* 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Thermometer above the ground, 5 feet [1.52 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midn't.	Daily means.	Max.	Min.	Range.	Daily means in centigrade.	Date.
40.6	40.6	38.4	36.5	36.9	36.9	37.2	36.0	36.4	35.1	**38.967**	**41.9**	34.2	7.7	**3.87**	1
34.4	34.1	33.6	34.2	33.4	33.4	33.4	32.9	32.4	32.6	33.871	35.1	32.3	2.8	1.04	2
38.7	38.9	38.1	35.9	34.2	35.1	34.4	33.4	33.4	33.3	34.821	39.2	31.4	7.8	1.57	3
34.9	34.7	35.0	34.2	34.0	33.4	32.8	32.8	32.8	32.6	33.712	35.0	32.3	2.7	0.95	4
39.3	35.4	35.6	37.6	37.4	34.6	34.8	34.6	32.4	34.4	34.083	39.3	31.4	7.9	1.16	5
37.2	36.3	36.4	36.6	34.6	33.5	32.9	32.2	32.2	31.6	35.017	38.9	31.4	7.5	1.68	6
34.9	33.4	33.6	33.4	33.7	33.4	33.4	33.7	33.4	34.3	**33.280**	36.0	**29.6**	6.4	**0.71**	7
40.2	39.0	36.4	36.8	36.6	36.6	36.6	36.5	36.4	36.5	37.629	40.9	33.4	7.5	3.13	8

TABLE LXIX.—*Daily mean temperatures at Fort Conger, August 5, 1881, to August 8, 1883, inclusive.*

$\phi = +81^\circ\ 44'$ $\lambda = -64^\circ\ 45' = -4^h\ 19^m$

Date.	August, 1881.	September, 1881.	October, 1881.	November, 1881.	December, 1881.	January, 1882.	February, 1882.	March, 1882.	April, 1882.	May, 1882.	June, 1882.	July, 1882.
1	....	**23.0**	4.6	— 7.4	— 27.6	—25.0	—49.0	— 23.1	— 32.7	8.9	21.0	41.8
2	....	22.4	**6.5**	**7.0**	**16.9**	23.6	51.5	31.6	—**34.6**	13.7	**18.5**	35.9
3	....	22.0	— 2.8	11.7	24.7	29.8	52.9	31.6	— 30.3	23.0	19.8	36.0
4	....	22.1	— 11.9	13.4	23.0	28.9	47.8	34.9	— 26.5	16.3	25.8	35.7
5	36.2	19.5	— 9.8	17.3	24.7	31.8	51.4	36.0	— 20.3	11.1	23.4	37.2
6	38.2	17.2	— 8.5	8.9	33.3	36.7	53.6	30.2	— 26.8	14.4	20.6	41.3
7	35.9	22.3	2.0	11.7	32.7	31.2	55.4	37.6	— 21.8	17.4	25.5	**42.2**
8	33.6	18.4	— 0.2	11.5	31.6	38.8	51.0	34.3	— 5.4	11.7	28.5	40.8
9	33.9	16.2	— 6.2	22.8	28.9	50.3	50.6	31.7	0.4	8.1	31.8	35.5
10	36.9	17.2	— 6.3	32.0	25.4	**52.0**	52.4	23.5	— 6.4	**6.7**	33.1	34.9
11	37.7	15.3	— 9.4	30.8	33.8	42.2	54.3	**13.9**	5.1	6.8	33.4	**32.7**
12	42.1	19.0	— 15.0	30.7	32.2	35.0	53.3	21.3	— 3.4	10.9	33.6	32.9
13	**43.2**	13.8	— 19.1	29.5	28.6	4[illegible].9	**57.5**	34.9	— 0.9	17.4	35.1	37.2
14	42.3	15.1	— 17.8	34.6	28.9	44.0	52.6	39.0	— 2.1	17.2	35.4	36.2
15	40.4	14.0	— 17.0	17.6	39.3	30.9	52.3	38.9	0.1	17.6	33.8	39.9
16	39.1	13.6	— 24.2	25.8	40.9	**21.7**	51.6	36.4	4.8	14.4	34.6	39.4
17	37.0	13.2	— 18.9	29.3	40.8	32.5	34.3	32.7	— 4.0	15.4	29.8	35.8
18	34.9	13.5	—**26.2**	26.3	42.8	40.3	40.7	28.8	— 7.0	16.9	28.5	37.1
19	27.9	8.8	— 20.4	20.4	**44.4**	39.6	43.5	27.0	— 9.2	18.0	33.2	35.8
20	22.3	3.6	— 11.5	20.1	43.9	40.3	44.9	24.3	— 13.2	19.2	34.3	35.9
21	32.8	— 3.6	— 6.0	25.9	31.9	38.6	46.1	14.4	— 13.6	23.5	36.7	35.3
22	31.7	— 2.5	— 10.8	31.4	27.7	43.4	44.3	30.5	— 6.7	21.7	40.9	36.0
23	31.1	2.3	— 13.1	33.3	25.0	36.0	48.2	30.0	**7.2**	20.7	38.8	34.9
24	27.7	1.3	— 7.5	30.9	26.5	44.4	39.7	37.5	2.4	17.4	30.2	36.6
25	27.1	— 3.3	— 3.8	29.5	29.8	45.6	**19.8**	**40.5**	3.0	18.1	38.8	37.1
26	28.9	—**4.7**	— 2.6	33.0	23.6	47.9	26.0	32.3	— 5.2	20.8	39.3	39.3
27	27.4	3.6	— 6.2	34.6	32.7	44.7	35.9	30.3	— 7.9	27.6	42.3	37.2
28	25.7	3.7	— 3.3	35.2	39.0	42.5	—40.5	30.2	— 9.2	30.5	46.4	36.4
29	28.6	— 1.2	— 7.4	36.0	39.2	47.2	....	29.6	— 7.4	**31.7**	43.5	34.6
30	27.1	1.3	— 5.5	—**37.6**	37.5	39.1	....	21.2	— 0.2	22.3	**48.1**	35.2
31	**24.4**	....	— 7.5	....	—35.0	—38.4	....	— 19.9	....	20.3	....	34.7
Means	33.30	10.92	— 9.22	—24.53	—32.01	—38.27	—46.47	— 29.94	— 8.61	17.41	33.12	36.82
Means in centigrade	0.72	—11.71	— 22.90	—31.40	—35.56	—39.04	—43.60	—34.41	— 22.56	— 8.10	0.62	2.68

TABLE LXIX.—*Daily mean temperatures at Fort Conger, August* 1, 1882, *to August* 8, 1883, *inclusive.*

$\phi = +81° 44'$ $\lambda = 64° 45' = -4^h 19^m$

August, 1882.	September, 1882.	October, 1882.	November, 1882.	December, 1882.	January, 1883.	February, 1883.	March, 1883.	April, 1883.	May, 1883.	June, 1883.	July, 1883.	August, 1883.	Date.
36.5	22.9	8.7	—**11.8**	—37.1	—40.7	—44.3	—**44.0**	—23.1	—2.6	**26.0**	**32.4**	**39.0**	1
35.5	23.8	**8.9**	19.2	**39.1**	36.3	46.5	34.3	25.8	—1.8	28.6	36.9	33.9	2
35.2	**26.0**	8.1	16.5	35.2	38.5	50.5	37.1	**27.9**	—**5.4**	34.6	35.1	34.8	3
35.3	25.0	0.9	17.1	29.6	40.2	45.5	34.5	19.1	—**5.4**	32.0	34.1	33.7	4
39.0	23.9	—7.5	27.2	33.0	**26.3**	42.7	37.4	10.6	—2.0	29.2	34.2	34.1	5
36.9	23.4	—6.8	26.3	33.5	27.5	42.7	29.8	17.5	1.0	31.0	31.3	35.0	6
34.1	20.7	—8.2	26.0	30.4	31.5	39.5	21.6	12.8	6.9	28.1	37.5	**33.3**	7
35.4	19.1	—9.4	31.0	31.3	34.0	38.3	6.8	12.2	7.3	30.9	39.2	37.6	8
37.8	16.4	—9.7	35.4	30.4	31.8	36.0	24.6	20.7	11.5	30.1	36.9	--------	9
33.2	20.4	—1.0	36.6	28.3	35.4	36.2	32.5	23.7	12.5	28.3	33.3	--------	10
40.0	20.5	1.4	35.8	25.9	36.2	36.1	30.4	21.6	16.0	30.6	35.2	--------	11
39.3	18.1	—4.4	32.3	28.9	31.6	27.9	19.4	18.9	15.8	29.3	41.4	--------	12
39.1	20.4	0.6	20.1	33.5	39.0	32.7	24.1	20.6	25.5	33.7	37.4	--------	13
40.4	16.1	0.1	20.7	27.5	40.6	39.9	—12.7	20.6	21.8	34.8	34.5	--------	14
37.7	14.9	—1.2	12.5	23.3	41.8	43.2	**1.6**	19.5	14.1	31.7	37.9	--------	15
38.4	17.4	—8.4	22.9	27.8	**45.5**	47.1	—16.9	19.2	16.5	32.0	42.3	--------	16
36.2	21.2	—14.0	32.5	33.5	39.0	44.1	15.2	17.9	12.1	35.3	41.4	--------	17
35.4	15.3	—12.7	33.3	25.1	38.3	40.8	14.1	16.0	13.4	33.8	40.9	--------	18
41.3	**6.2**	—**17.9**	23.5	25.7	44.6	33.1	7.6	10.5	16.5	31.7	40.0	--------	19
38.2	6.4	—8.7	23.8	19.8	41.6	19.5	9.2	16.7	21.6	34.7	41.5	--------	20
38.4	10.4	—12.6	29.9	31.9	33.9	**12.9**	13.6	15.6	25.4	35.4	36.5	--------	21
35.9	19.2	—10.4	32.8	27.9	34.4	16.8	8.4	8.6	**26.7**	33.8	40.5	--------	22
34.3	21.6	—10.2	32.8	28.7	34.3	38.4	8.3	10.1	23.8	35.4	36.1	--------	23
34.6	16.7	—17.7	34.6	20.6	40.1	44.8	19.9	8.1	26.3	**35.5**	36.2	--------	24
33.2	11.0	—17.3	32.8	**1.7**	40.0	46.5	13.7	7.7	23.5	33.4	33.5	--------	25
30.6	12.0	—15.9	32.3	12.2	34.4	42.[illegible]	4.8	8.7	21.4	34.7	33.7	--------	26
28.9	21.8	—11.6	30.3	33.0	29.9	50.[illegible]	5.9	3.3	22.8	34.8	35.4	--------	27
29.8	23.0	—17.2	32.5	31.7	27.6	—**51.2**	2.9	**1.2**	21.9	34.7	34.3	--------	28
30.4	15.8	—17.8	**39.3**	18.6	28.4	--------	3.1	1.3	20.6	35.2	35.2	--------	29
27.6	13.1	—17.3	—37.9	19.8	29.2	--------	7.4	—4.3	25.2	33.7	42.7	--------	30
25.6	--------	—10.9	--------	—35.5	—37.1	--------	—17.0	--------	25.7	--------	**44.7**	--------	31
35.30	18.09	—7.75	—27.99	—27.76	—35.80	—38.93	—17.92	—14.78	14.79	32.43	37.18	--------	
1.83	—7.73	—22.08	—33.32	—33.20	—37.67	—39.40	—27.73	—25.99	—9.57	0.24	2.88	--------	

TABLE LXX.—*Hourly mean temperatures at Fort Conger from August 5, 1881, to August 4, 1883, inclusive.*

$\phi = +81° 44'$. $\lambda = -64° 45' = -4^h 19^m$

Time.	August, 1881.*	September, 1881.	October, 1881.	November, 1881.	December, 1881.	January, 1882.	February, 1882.	March, 1882.	April, 1882.	May, 1882.	June, 1882.	July, 1882.
1 a. m.	32.22	9.95	− 8.11	−23.31	−32.33	−38.18	−47.44	−30.81	−12.80	14.06	31.10	36.12
2 a. m.	32.29	9.66	8.04	23.62	32.57	38.85	47.56	31.03	13.04	14.25	30.98	35.91
3 a. m.	32.25	9.42	8.39	23.93	32.24	39.19	47.72	31.07	12.68	14.25	31.27	36.16
4 a. m.	32.28	10.24	8.44	24.26	32.34	38.76	48.30	31.33	11.90	13.91	31.29	36.21
5 a. m.	32.66	10.50	8.69	24.45	32.75	39.42	47.82	31.47	11.49	14.71	31.48	36.03
6 a. m.	33.19	10.17	8.49	24.43	32.38	39.33	47.80	31.47	10.76	15.49	31.54	36.38
7 a. m.	33.20	10.77	8.39	24.94	32.37	39.20	47.43	30.94	9.67	16.77	32.35	36.55
8 a. m.	33.46	10.75	9.29	24.85	32.47	38.92	47.74	31.30	9.16	17.13	32.70	36.50
9 a. m.	33.76	11.40	9.96	25.23	32.43	38.37	46.50	29.99	8.19	18.03	33.08	37.20
10 a. m.	34.05	12.52	9.03	24.85	32.03	38.19	46.44	29.23	6.83	18.39	33.99	37.27
11 a. m.	34.60	13.73	9.21	25.23	32.08	37.58	46.92	28.54	6.17	19.39	34.12	37.53
Noon	35.05	13.36	9.53	24.74	32.26	37.46	46.48	28.20	5.56	19.76	34.74	37.75
1 p. m.	35.25	12.78	9.96	24.97	31.74	37.87	45.93	28.14	4.96	19.93	34.67	38.12
2 p. m.	35.23	12.28	9.67	24.98	31.36	38.23	46.26	27.75	5.45	20.29	35.01	37.91
3 p. m.	35.42	11.88	9.99	25.04	31.44	38.25	46.45	28.21	4.74	20.63	35.10	38.03
4 p. m.	35.13	11.80	10.17	24.99	31.41	37.93	45.71	28.62	5.51	20.32	34.62	37.61
5 p. m.	34.45	11.31	9.66	25.37	31.50	37.49	45.49	28.85	5.79	19.61	34.27	37.48
6 p. m.	34.19	10.56	9.53	24.94	31.09	37.12	45.76	29.07	6.69	19.27	33.85	37.54
7 p. m.	33.93	10.10	9.47	24.12	31.55	37.49	45.48	29.26	7.89	18.76	33.79	37.18
8 p. m.	33.40	9.67	9.46	24.14	32.02	37.85	45.33	30.14	8.05	18.07	33.52	36.71
9 p. m.	32.79	10.00	9.46	24.20	31.92	38.07	45.45	29.93	8.96	17.21	33.34	36.12
10 p. m.	32 32	9.82	9.96	23.98	31.63	38.01	45.37	30.92	9.27	16.27	32.99	35.95
11 p. m.	32.27	9.64	9.25	24.29	32.28	38.97	45.22	31.03	10.18	15.96	32.76	35.95
Midnight	32.08	9.62	− 9.14	−23.94	−32.06	−37.75	−44.69	−31.13	−10.83	15.34	32.38	35.52
Means	33.561	10.915	− 9.220	−24.533	−32.011	−38.271	−46.472	−29.935	− 8.607	17.409	33.122	36.821
Means in centigrade	0.87	- 11.71	−12.66	−31.41	−35.56	−39.04	−43.60	−34.41	−22.56	− 8.10	0.62	2.69

Time.	August, 1882.	September, 1882.	October, 1882.	November, 1882.	December, 1882.	January, 1883.	February, 1883.	March, 1883.	April, 1883.	May, 1883.	June, 1883.	July, 1883.
1 a. m.	34.39	17.49	− 7.090	−27.63	−27.574	−35.813	−39.314	−19.193	−18.527	10.794	30.367	35.168
2 a. m.	34.43	17.43	7.481	27.21	27.871	36.481	39.679	19.833	18.977	10.694	30.463	35.139
3 a. m.	34.59	17.79	7.519	27.43	27.345	35.845	39.782	18.690	18.952	10.697	30.290	35.203
4 a. m.	34.59	17.81	7.661	27.46	27.668	35.284	39.475	19.053	18.716	11.090	30.583	35.361
5 a. m.	34.87	17.49	7.742	27.95	27.691	35.187	39.261	18.007	19.094	11.897	31.070	35.581
6 a. m.	35.00	17.59	7.939	27.78	27.290	35.458	38.711	17.250	18.800	12.945	31.390	36.010
7 a. m.	35.36	17.72	7.615	28.47	27.248	35.548	38.114	15.757	18.968	14.332	32.143	36.387
8 a. m.	35.42	17.79	7.719	28.31	27.616	35.513	37.950	14.563	18.294	14.894	32.293	36.881
9 a. m.	35.95	18.45	7.932	28.61	28.032	35.932	38.868	13.383	18.177	16.097	32.910	37.129
10 a. m.	35.66	18.81	7.561	28.25	27.913	35.742	39.225	12.180	17.597	16.607	33.213	37.800
11 a. m.	36.36	19.04	7.671	28.26	27.687	35.894	38.496	10.527	16.397	17.663	33.657	38.000
Noon	36.37	19.23	7.352	28.33	27.610	36.139	38.825	10.783	16.426	18.181	34.117	38.590
1 p. m.	36.08	19.18	7.642	27.80	27.216	36.342	38.782	9.903	16.374	18.142	34.280	38.803
2 p. m.	35.96	19.25	7.923	28.10	26.787	36.016	38.814	9.937	17.139	18.352	34.380	39.242
3 p. m.	35.78	19.08	7.948	27.92	27.536	35.752	38.471	10.227	16.381	18.433	34.478	39.007
4 p. m.	35.86	18.55	7.026	27.61	27.897	35.338	38.843	11.347	16.700	17.664	34.277	39.197
5 p. m.	36.00	18.35	7.429	27.81	28.181	35.981	38.839	11.940	17.371	17.390	33.950	39.097
6 p. m.	35.78	17.70	7.890	27.65	28.271	35.752	38.814	12.980	17.887	17.081	33.490	38.423
7 p. m.	35.53	17.66	7.939	28.06	28.645	35.684	39.339	13.860	18.261	15.913	33.120	38.013
8 p. m.	35.33	17.50	7.961	28.42	28.119	35.719	38.861	15.117	18.513	14.890	32.580	37.597
9 p. m.	35.00	17.71	7.623	28.34	28.274	35.858	38.921	15.663	17.981	14.123	31.880	37.194
10 p. m.	34.72	17.65	7.655	28.22	27.723	36.242	38.947	17.633	17.448	12.987	31.553	36.900
11 p. m.	34.08	17,48	7.523	28.10	28.068	36.200	39.068	18.473	17.477	12.316	31.113	35.981
Midnight	34.10	17.34	− 8.177	−28.07	−28.036	−35.571	−38.971	−18.333	−18.287	11.761	30 657	35.684
Means	33.302	18.087	− 7.751	−27.987	−27.763	−35.804	−38.932	−14.776	−17.917	14.789	32.427	37.183
Means in centigrade	1.83	− 7.73	−22.08	−33.32	−33.20	−37.67	−39.40	−25.99	−27.73	− 9.57	0.24	2.88

* These means cover August 5 to 31, 1881, and August 1 to 4, 1883.

TABLE LXXI.—*Temperature means by decades at Fort Conger.*

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

Date.	Discovery Bay. 1875–'76.	Fort Conger. 1881–'82.	Fort Conger. 1882–'83.	Grand mean. Fahrenheit.	Grand mean. Centigrade.
	°	°	°	°	°
Aug. 1–10	36.72	35.60	35.90	36.07	2.26
Aug. 11–20	33.33	37.19	38.60	36.37	2.42
Aug. 21–31	28.15	28.42	31.77	29.45	−1.42
Sept. 1–10	21.30	20.05	22.15	21.17	−6.02
Sept. 11–20	23.49	13.00	15.65	17.38	−8.12
Sept. 21–30	10.78	−0.30	16.46	8.98	−12.81
Oct. 1–10	8.82	−3.27	−1.61	1.31	−17.05
Oct. 11–20	−12.81	−17.95	−6.52	−12.43	−24.68
Oct. 21–31	−23.92	−6.69	−14.45	−15.02	−26.12
Nov. 1–10	−9.12	−14.38	−24.72	−16.07	−26.70
Nov. 11–20	−22.67	−26.50	−25.73	−24.97	−31.65
Nov. 21–30	−23.45	−32.72	−33.51	−29.89	−34.38
Dec. 1–10	−7.85	−26.88	−32.78	−22.50	−30.28
Dec. 11–20	−28.42	−37.55	−27.11	−31.03	−35.02
Dec. 21–31	−36.18	−31.64	−23.80	−30.54	−34.74
Jan. 1–10	−32.84	−34.82	−34.24	−33.97	−36.65
Jan. 11–20	−39.81	−37.03	−39.83	−38.89	−39.38
Jan. 21–31	−48.50	−42.54	−36.57	−42.54	−41.41
Feb. 1–10	−25.81	−51.56	−42.21	−39.86	−39.92
Feb. 11–20	−43.70	−48.50	−36.45	−42.88	−41.60
Feb. 21–28, 29	−35.55	−37.57	−37.93	−36.96	−38.31
Mar. 1–10	−54.03	−31.44	−30.26	−38.58	−39.21
Mar. 11–20	−29.37	−29.72	−14.81	−24.63	−31.46
Mar. 21–31	−28.76	−28.76	−9.53	−22.35	−30.20
Apr. 1–10	−27.41	−20.43	−19.32	−22.39	−30.21
Apr. 11–20	−19.88	−2.99	−18.14	−13.67	−25.37
Apr. 21–30	−4.53	−2.40	−6.87	−4.60	−20.33
May 1–10	−1.29	13.13	2.19	4.68	−15.18
May 11–20	10.66	15.39	17.33	14.46	−9.74
May 21–31	19.63	23.14	23.93	22.23	−5.42
June 1–10	29.14	24.79	29.87	27.93	−2.26
June 11–20	32.18	33.17	32.74	32.70	0.39
June 21–30	36.17	41.40	34.67	37.41	3.01
July 1–10	36.88	38.12	35.10	36.70	2.61
July 11–20	36.80	36.30	39.27	37.46	3.04
July 21–31	37.87	36.12	37.18	37.06	2.81

ANNUAL MEAN TEMPERATURE OF THE ATMOSPHERE.

The annual mean temperature of Fort Conger, dependent on three years' observations, is −3.9° [−19.93° C.], a value which may be considered quite reliable, as the greatest departure is but 1.38° [.77° C.]. In obtaining this mean the observations of the British Arctic Expedition of 1875–'76 have been used, as they were made at the same spot as those of the Lady Franklin Bay Expedition and are directly comparable.

For the purpose of comparison there has been added to the table the temperature means by months for adjacent arctic stations, Thank God Harbor, and Floeberg Beach.

TABLE LXXII.—*Mean temperature.*

Month.	Discovery Bay. $\phi=+81^\circ 44'$	Fort Conger. $\phi=+81^\circ 44'$			Thank God Harbor. $\phi=+81^\circ 38'$	Grand mean, four years. $\phi=+81^\circ 42'$	Floeberg Beach. $\phi=+82^\circ 27'$
	1875–'76.	1881–'82.	1882–'83.	Means for three years.	1871–'72.		1875–'76.
	°	°	°	°	°	°	°
August	32.72	33.39	35.30	33.77	36.0	34.33	31.91
September	18.52	10.92	18.09	15.84	23.4	17.73	15.60
October	− 9.79	− 9.22	− 7.75	− 8.92	− 1.3	− 7.02	− 4.99
November	−18.41	−24.53	−27.99	−23.64	− 8.6	−19.88	−16.85
December	−24.54	−32.01	−27.76	−28.10	−15.7	−25.00	−22.12
January	−40.64	−38.27	−35.80	−38.24	−22.1	−34.20	−32.92
February	−35.00	−46.47	−38.93	−40.13	−23.2	−35.90	−37.98
March	−37.05	−29.94	−17.92	−28.10	−23.4	−27.08	−39.77
April	−17.27	− 8.61	−14.78	−13.55	− 7.7	−13.[illegible]9	−17.96
May	10.04	17.41	14.79	14.08	16.9	14.78	11.21
June	32.50	33.02	32.43	32.65	36.4	33.59	32.46
July	37.21	36.85	37.18	37.08	40.5	37.94	38.36
Annual means	− 4.23	− 4.95	− 2.52	− 3.93	4.24	− 1.89	− 3.47
Means in centigrade	−20.13	−20.53	−19.18	−19.96	−15.42	−18.82	−19.70

This annual mean −3.93° [−19.96° C.] is the lowest for any known spot on the globe, that of Van Rensselaer Harbor, −2.46° [−19.15], dependent on two years' observations, being next in order. The mean temperature during the absence of the sun, for four and a half months each year, is −30.61° [−34.78° C.], probably lower than that recorded for any other locality for an equally prolonged period.

There is also subjoined the observed mean temperatures of Van Rensselaer Harbor, North Star Bay, Port Foulke, Polaris House, and Camp Clay.

TABLE LXXIII.—*Mean temperature.*

Month.	North Star Bay. $\phi=+76^\circ 33'$	Van Rensselaer Harbor. $\phi=+78^\circ 37'$		Port Foulke. $\phi=+78^\circ 18'$	Polaris House. $\phi=+78^\circ 22'$	Camp Clay. $\phi=+78^\circ 45'$	Grand mean. $\phi=+78^\circ 12'$
	1849–'50.	1853–'54.	1854–'55.	1860–'61.	1872–'73.	1883–'84.	
	°	°	°	°	°	°	°
August	33.8		31.82			31.65	32.42
September	27.0	17.16	9.74	22.60		17.55	18.81
October	12.6	1.62	− 8.78	7.60		0.96	2.80
November	−16.3	−22.39	−21.52	2.84	− 1.84	−21.00	−13.37
December	−24.1	−25.46	−36.79	−12.81	− 8.75	−20.40	−21.38
January	−22.3	−29.21	−27.23	−25.97	−29.34	−28.28	−27.06
February	−30.6	−32.65	−20.22	−24.88	−25.49	−19.83	−25.61
March	−15.2	−36.79	−32.98	−22.32	−25.10	−16.29	−24.78
April	− 3.0	− 7.69	−13.01	−11.01	− 4.74	− 1.47	− 6.82
May	25.6	13.45		23.77	18.82	14.27	19.18
June	39.4	30.12		33.85		35.17*	34.59
July	39.8	38.19		40.54			39.51
Annual means	5.56	− 2.46		------	------	------	2.35
Means, centigrade	−14.69	−19.15		------	------	------	16.47

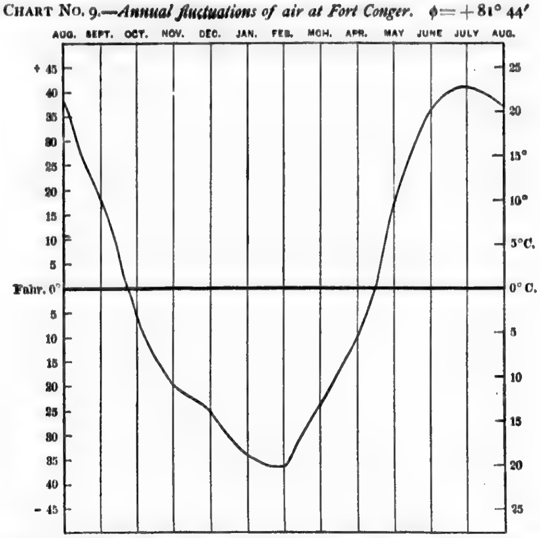
* Twenty-one days.

In order to obtain the best value for the mean annual temperature of that latitude, there has been combined for that purpose only the observed mean temperature at Thank God Harbor with those at Fort Conger, which gives an annual mean, dependent on four years' observations, of $-1.89°$ [$-18.83°$ C.] for latitude 81° 42′ N. In like manner the observed mean temperatures for North Star Bay, Van Rensselaer Harbor, Port Foulke, Polaris House, and Camp Clay have been combined, which gives a mean annual temperature of 2.35° [-16.47 C.], dependent on observations for part of six years in a mean latitude of 78°. These means indicate a decrease of 1.1° [0.6° C.] for each degree of latitude to the northward. This ratio of decrease, extended to the north geographical pole, would result in an annual mean of $-10°$ [$-23°.3$ C.] for that point. While this mean would not be far from correct if the North Pole is surrounded by land of considerable extent, yet it can be considered only as approximate.

ANNUAL FLUCTUATION OF THE TEMPERATURE OF THE ATMOSPHERE.

The annual fluctuation is shown in detail by Table LXXII, and is graphically reproduced by the following chart:

CHART NO. 9.—*Annual fluctuations of air at Fort Conger.* $\phi = +81° 44'$



At the mouth of Smith Sound the highest mean occurs in July, as at Conger, but the lowest mean falls in February, and at Point Barrow in December.

The maximum monthly mean at Fort Conger, 37.08° [2.82° C.], occurs in July, and decreases steadily until in February the lowest mean, $-40.13°$ [$-40.07°$ C.], is reached.

By decades, Table LXXI, the decrease and increment between the second decades of July and February are also strictly regular, being almost uninterrupted.

The greatest monthly decrease, 24.76° [13.76° C.], from September to October, is coincident, as would be expected, with the departure of the sun for winter, but the greatest monthly increase, 27.63° [15.35° C.], from April to May, lags behind the returning sun fully two months. In both cases, however, the rate of increase or decrease is greatest in the third month of the movement.

The greatest difference between the monthly mean temperatures at Fort Conger and those near the mouth of Smith Sound is found, as might be surmised, during the absence of the sun, for which period it averages about 7° [4° C.], reaching its maximum difference, 10.3° [5.7° C.], in February. The average difference during the presence of the sun is about 2° [1° C.], the least being 0.3° [0.17° C.] in August. This is to be expected, owing to the very low temperature, about 30° [$-1.1°$ C.] of the sea, as well as the great amount of eternal ice over the adjacent land areas, which keeps the temperature near the freezing point.

The range of summer and winter mean temperature for latitude 81° 42′ is 66.7° [37.1° C.], while that for 78° 12′, at the mouth of Smith Sound, is 60.7° [33° C.]. As Schott has already pointed out, the difference between extreme seasons gradually increases northward along the west coast of Greenland. Taking Schott's figures for Upernivik, 47.7° [8.7° C.], the increase northward for each degree of latitude does not vary much from 2° [1° C.].

MEAN TEMPERATURE RANGES.

TABLE LXXIV.—*Monthly ranges of mean temperature at Fort Conger.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881–'82.	1882–'83.	1875–'76.	Mean, three years.	
				Fahrenheit.	Centigrade.
August	18.77	15.69	20.05	18.17	10.09
September	27.61	19.78	22.92	23.44	13.02
October	32.78	26.67	48.55	36.00	20.00
November	30.55	27.47	45.50	34.51	19.17
December	27.51	37.36	53.00	39.29	21.83
January	30.29	19.18	37.85	28.78	15.99
February	37.73	38.36	47.17	**41.08**	**22.82**
March	20.63	**45.58**	**53.21**	39.80	22.11
April	**41.79**	26.74	43.02	37.18	20.66
May	25.03	32.07	34.60	30.51	16.95
June	29.60	**9.51**	14.67	17.93	9.96
July	**9.52**	13.36	**6.34**	**9.74**	**5.41**

The monthly range of mean temperature—that is, the difference between the highest and lowest daily means—is the greatest, 41.1° [22.8° C.], in February, from which it uninterruptedly decreases to the minimum in July, 9.7° [5.4° C.].

The introduction of the English observations of 1875–'76, while generally increasing the monthly ranges, does not change the maximum and minimum as determined in 1881–'83.

Schott has shown that at Port Foulke, 1860–'61, the greatest monthly range, 41° [22.8° C.], was in November and the least, 19° [10.6° C.], in July.

The observations at Conger confirm the observations at Port Foulke for July, but render it quite certain that November was accidentally the month of greatest range in 1860 at Port Foulke, as December was at Discovery Bay (Fort Conger) in 1875.

The greatest and least monthly ranges at Fort Conger were noted by the English expedition, 53.0° [29.4° C.], December 1875, and 6.4° [3.6° C.] July, 1876. From 1881 to 1883 the greatest month's range was 45.6° [25.3° C.] in March, 1883, and the least, 9.5° [5.3° C.], in July, 1882, and June, 1883.

The absolute range of the daily means, 1881–1883, is 105.65° [58.7° C.], from −57.55° [−49.8° C.] February 13, 1882, to 48.10° [8.9° C.] June 30, 1882. The absolute range is further increased to 112.48° [62.5° C.] by considering the mean temperature, −64.38° [−53.5° C.], recorded March 2, 1876.

The mean daily ranges of the temperature of the air at Fort Conger are given below.

TABLE LXXV.—*Mean daily ranges*, 1881–'83.

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	Range.		Month.	Range.	
	Fahrenheit.	Centigrade.		Fahrenheit.	Centigrade.
August	**7.56**	**4.20**	February	**11.72**	**6.51**
September	10.20	5.67	March	16.51	9.17
October	11.78	6.54	April	**17.00**	**9.44**
November	**14.86**	**8.26**	May	13.31	7.39
December	13.20	7.33	June	8.10	4.50
January	12.24	6.80	July	8.50	4.72

It appears that the mean daily ranges run in a double curve throughout the months, with the principal maximum, 17.0° [9.4° C.], in April, and minimum, 7.6° [4.2° C.], in August. It is interesting to note that both extremes occur during months when the sun was almost constantly above the horizon.

The mean daily range for the first year was 12.3° [6.8° C.], and for the second 11.5° [6.4° C.], with a grand mean of 11.9° [6.6° C.].

The following table shows the highest and lowest temperatures observed at Fort Conger, and also the absolute ranges for each month of the year:

TABLE LXXVI.—*Absolute ranges of temperature at Fort Conger* (1875-'76, 1881-'83).

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

Month.	1881 and 1882.					1882 and 1883.					1875 and 1876.			Absolute range.	
	Max.	Date.	Min.	Date.	Range.	Max.	Date.	Min.	Date.	Range.	Max.	Min.	Range.	*Fahr.*	*C.*
August	45.9	12th	15.6	31st	30.3	47.8	21st	22.8	31st	25.0	41.0	26.0	**15.0**	32.2	17.89
September	30.0	4th	-10.4	30th	40.4	27.4	5th	0.7	21st	26.7	43.0	2.4	40.6	53.4	29.67
October	9.0	3d	-31.1	18th	40.1	14.0	1st	-23.5	19th	37.5	21.5	-39.0	60.5	60.5	33.61
November	-3.0	2d	-43.0	30th	40.0	-1.1	15th	-46.0	29th	44.9	19.0	-46.0	65.0	65.0	36.11
December	-10.0	2d	-52.2	20th	42.2	5.5	26th	-43.9	31st	49.4	26.0	-54.0	**80.0**	80.0	44.44
January	-9.5	16th	-58.2	10th	48.7	-18.0	5th	-50.6	16th	32.6	-13.0	-63.0	50.0	53.5	29.72
February	-10.0	25th	**-62.1**	3d	52.1	-5.0	21st	**-56.5**	27th	51.5	2.0	-62.0	64.0	64.1	35.61
March	-7.0	21st	-46.8	25th	39.8	20.0	14th	-49.1	1st	**69.1**	-8.0	**-70.8**	62.8	**90.8**	**50.44**
April	13.9	15th and 16th.	-42.1	3d	**56.0**	6.6	29th	-37.3	3d	43.9	13.0	-42.5	55.5	56.4	31.33
May	35.8	29th	1.1	11th	34.7	32.3	22d	-13.0	1st	45.3	33.6	-20.5	54.1	56.3	31.28
June	**53.0**	30th	12.7	3d	40.3	39.6	17th	22.7	2d	**16.9**	41.0	16.5	24.5	40.3	22.39
July	50.3	1st	30.0	12th	**20.3**	**52.4**	12th	29.3	29th	23.1	**46.3**	29.6	16.7	**23.1**	**12.83**

The greatest absolute range in any month is 90.8° (50.4° C.) in March, and the least 23.1° (12.8° C.) in July.

The extreme temperatures observed at Fort Conger, 1881-'83, were 53.0° [11.7° C.] June 30, 1882, and* -63.1° [-52.8° C.] on February 3, 1882, making an extreme range of 116.1° [64.5° C.].

On June 29, 1882, on the shores of Lake Hazen in the interior of Grinnell Land, a temperature of +73 [+22.8 C.] was observed, and on March, 1876, a minimum of -70.8° [-57.1° C.] was recorded at Discovery Bay (Fort Conger). This makes the absolute recorded range at Fort Conger 123.8° [68.8° C.], and for the adjacent country 143.8° [79.9° C.]. The absolute range at Van Rensselaer Harbor is 117.4° [65.2° C.], and for the adjacent country 129.4° [71.9° C.]

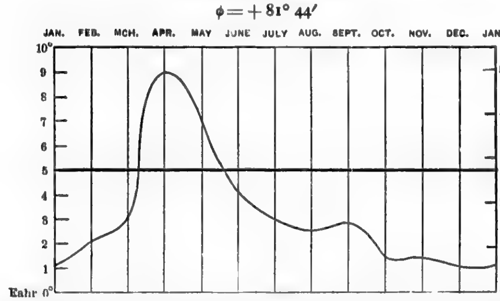
The absolute range at Fort Conger may seem large, but it is exceeded in the United States at nearly every station in the Missouri, Upper Mississippi, and Red River valleys, and in the northern Rocky Mountain region.†

DIURNAL AMPLITUDF OF TEMPERATURE.

The observations of H. M. S. *Discovery* (at Fort Conger), 1875-'76, being four-hourly, were not sufficiently frequent to be of value in discussing the diurnal amplitude. The daily range at Fort Conger as determined by hourly observations, 1881-'83, is greatest in April, 9.01° (5.0° C.), and diminishes quite regularly to its minimum value, 1.15° [0.64° C.], in December.

CHART No. 10.—*Annual inequality in diurnal amplitude of temperature at Fort Conger*, 1881-'83.

$\phi = +81^\circ 44'$



* This reading was made from a strictly comparable and properly exposed thermometer, 4 feet [1.2m] above the harbor floe, at the same time that the thermometer 40 feet [12.2m] above the sea in the instrument shelter read -62.1° [-52.3° C.].

†At Fort Benton, Montana, the absolute range is not only 167° (92.8° C.), 42.6° [23.7° C.] greater than at Fort Conger, but it occurred within eight months, from -59° [-50.6° C.] December 29, 1880, to 108° [42.2° C.] August, 1881.

Schott, in discussing Hayes' observations at Port Foulke, page 185, says: "The great rise in spring is due to the immediate effect of the sun *before* it has power enough to melt a sufficient quantity of ice to check it. * * A more full material for discussion would probably bring out a small increase in the range late in summer or early in autumn, at a time when the freezing process again comes into powerful action. Of such an increase we have at present only a trace."

The greatest diurnal amplitude occurs in April at Fort Conger, as well as at Van Rensselaer Harbor, Thank God Harbor, and Floeberg Beach, at which stations, being not dissimilar in location, and of greater latitude than Port Foulke, the sun comes and the ice melts correspondingly later.

A corresponding "increase in the range late in summer" comes as pointed out by Schott, being naturally earlier at the more northerly station than at Port Foulke. That it is not more marked results from the speedy departure of the sun when a period of accidental variation begins.

The following table of diurnal amplitude at Arctic stations has been collated:

TABLE LXXVII.—*Diurnal amplitude of temperature at—*

Month.	Fort Rae. $\phi=+62° 39'$	Jan Mayen. $\phi=+71° 00'$	Sagastyr. $\phi=+73° 23'$	Pt. Barrow.* $\phi=+71° 17'$	Port Kennedy. $\phi=+72° 01'$	Port Foulke. $\phi=+78° 18'$	Van Rensselaer Harbor. $\phi=+78° 37'$	Thank God Harbor. $\phi=+81° 38'$	Ft. Conger.* $\phi=+81° 44'$	Floeberg Beach. $\phi=+82° 0'$
	°	°	°	°	°	°	°	°	°	°
January	6.05	2.39	6.61	3.70	1.41	1.43	1.55	2.02	1.23	1.98
February	5.22	2.20	2.57	3.43	1.49	4.24	3.07	1.84	2.06	2.65
March	2.94	1.04	2.68	2.03	9.55	**8.87**	5.66	2.63	3.02	5.24
April	**2.06**	**0.76**	1.71	2.86	7.42	5.42	**9.09**	**7.94**	**9.01**	**6.70**
May	2.11	1.12	1.96	**1.24**	7.94	6.44	7.34	5.26	7.10	5.14
June	3.37	1.73	**0.95**	1.72	**9.60**	4.99	5.10	2.32	4.08	2.94
July	5.61	2.09	2.70	1.73	6.97	4.26	3.37	1.71	3.10	2.55
August	**9.55**	0.97	8.39	6.20	2.63	3.03	5.30	7.09	2.62	------
September	9.00	2.38	**11.52**	**8.30**	2.94	1.83	5.55	1.03	2.90	------
October	8.55	**4.37**	8.10	6.71	2.18	2.24	1.67	**0.24**	1.47	**1.76**
November	7.44	2.58	4.66	4.75	2.17	1.55	**1.00**	1.48	1.51	2.15
December	6.78	2.95	4.72	5.60	**0.84**	**0.18**	1.65	1.67	**1.15**	1.99

* Two Years.

The Fort Conger minimum occurs in December, being in agreement in time with Port Foulke, Port Kennedy, and Point Barrow. The lowest amplitude at Floeberg Beach, in October, being calculated from bi-hourly observations, is not strictly comparable with the other months during which hourly observations were made.

At other Arctic stations in the above table the minimum amplitude occurs in November, except at Sagastyr, where it appears to occur in January.

There is no doubt that the time of the maximum amplitude depends on the percentage of cloudiness, and the June amplitude of Port Kennedy, which equals that of April, occurred during a month of unusually clear sky.

THE DIURNAL FLUCTUATION OF THE TEMPERATURE.

The mean diurnal fluctuation of the temperature at Fort Conger, 1881–'83, is given in the following tables for each month of the year, during the absence of the sun (one hundred and thirty-five days each year) and for the whole period.

TABLE LXXVIII.—*Diurnal variation of temperature, deduced from observations at Fort Conger, from August 5, 1881, to August 4, 1883, inclusive.*

For each month for the whole period, and during the absence of the sun (135 days each year).

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Washington mean time.*	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.
	°	°	°	°	°	°	°	°	°	°	°	°
1 a. m.	—1.13	—0.78	**0.86**	0.79	—0.06	0.04	—0.68	—0.74	—4.31	—**3.67**	—2.04	—1.35
2 a. m.	—1.07	— .95	.73	**.85**	— .33	— **.62**	— .92	—1.07	—**4.75**	—3.63	—**2.06**	—**1.48**
3 a. m.	— .85	— .90	.54	.58	.10	— .48	—1.05	—1.27	—3.99	—3.62	—1.99	—1.32
4 a. m.	— .95	— .47	.44	.40	— .11	.01	—**1.19**	—1.09	—3.79	—3.60	—1.83	—1.22
5 a. m.	— .67	— .51	.26	.06	— **.34**	— .26	— .84	—**1.35**	—3.06	—2.80	—1.49	—1.20
6 a. m.	— .33	— .62	.28	.15	.06	— .35	— .56	—1.20	—2.32	—1.88	—1.30	— .81
7 a. m.	— .15	— .25	.49	— .44	.08	— .34	— .07	—1.02	—1.02	— .55	— .52	— .55
8 a. m.	.01	— .23	— .02	— .32	— .16	— .18	— .15	— .87	— .17	— .09	— .27	— .31
9 a. m.	.41	.43	— .46	— **.66**	— **.34**	— .11	.02	— .16	.90	.96	.23	.17
10 a. m.	.43	1.16	.20	— .29	— .08	.07	— .12	.52	2.17	1.40	.83	.53
11 a. m.	1.05	**1.88**	.05	— .49	— .01	.30	.01	.46	3.34	2.43	1.12	.76
Noon	**1.28**	1.80	.05	— .30	— .04	.24	.05	1.62	3.52	2.87	1.66	1.17
1 p. m.	1.23	1.48	— .31	— .12	.41	— .06	.35	**1.67**	**4.26**	2.94	1.70	1.46
2 p. m.	1.17	1.27	— .31	— .29	**.81**	— .08	.16	1.48	4.00	3.22	1.93	**1.62**
3 p. m.	1.17	.98	— .48	— .22	.40	.04	.24	1.63	4.21	**3.43**	**2.02**	1.52
4 p. m.	1.07	.68	— **.61**	— .04	.24	.40	.43	[illegible]	3.26	[illegible]	1.68	1.40
5 p. m.	.80	.33	— .06	— .33	.05	.30	.54	.82	2.81	2.40	1.34	1.29
6 p. m.	.55	— .37	— .22	— .04	.21	**.61**	.41	.45	1.86	2.07	.90	.98
7 p. m.	.31	— .62	— .21	.17	— .21	.45	.29	.17	.81	1.24	.69	.59
8 p. m.	— .06	— .92	— .22	— .02	— .18	.26	.61	— .40	.11	.38	.28	.15
9 p. m.	— .53	— .64	— .05	— .01	— .21	.07	.51	— .02	— .62	— .43	— .16	— .34
10 p. m.	— .91	— .77	— .32	.16	.22	— .09	.54	— .25	—1.76	—1.47	— .50	— .57
11 p. m.	—1.25	— .94	.10	.07	— .29	— .55	.56	— .33	—2.64	—1.96	— .83	—1.04
Midn't	—**1.34**	—**1.02**	— .17	.26	— .16	.38	**.87**	— .78	—2.89	—2.55	—1.26	—1.40
Daily range, 1881–'83	2.62	2.90	1.47	1.51	1.15	1.23	2.06	3.02	9.01	7.10	4.08	3.10
Centigrade	1.45	1.61	.82	.84	.64	.68	1.14	1.68	5.00	3.94	2.26	1.72

Washington mean time.*	270 days.	Annual mean.		Washington mean time.*	270 days.	Annual mean.	
		Fahr.	C.			Fahr.	C.
	°	°	°		°	°	°
1 a. m.	0.09	—1.08	—0.60	1 p. m.	0.05	1.23	0.68
2 a. m.	— .18	—1.28	— .71	2 p. m.	.06	1.26	.70
3 a. m.	— .13	—1.20	— .67	3 p. m.	.04	1.23	.68
4 a. m.	— .15	—1.12	— .62	4 p. m.	.15	1.05	.58
5 a. m.	— .29	—1.02	— .57	5 p. m.	.04	.81	.45
6 a. m.	— .15	— .74	— .41	6 p. m.	.29	.62	.34
7 a. m.	— .10	— .36	— .20	7 p. m.	.16	.30	.17
8 a. m.	— .22	— .24	— .13	8 p. m.	.17	— .01	— .01
9 a. m.	— .34	.11	.06	9 p. m.	.11	— .21	— .12
10 a. m.	— .11	.57	.32	10 p. m.	.17	— .49	— .27
11 a. m.	— .07	.98	.54	11 p. m.	± .00	— .77	— .43
Noon	— .03	1.15	.64	Midnight	.33	— .85	— .47

*To reduce to local mean time add 49^m

The extremes are twelve hours apart and have substantially the same value, the maximum hourly temperature being 1.26° [0.70° C.], at 2 p. m. and the lowest, —1.28° [—0.71° C.], at 2 a. m. The whole fluctuation, 2.54° [1.41° C.], is extremely small, especially as Fort Conger is not situated near any extensive body of water.

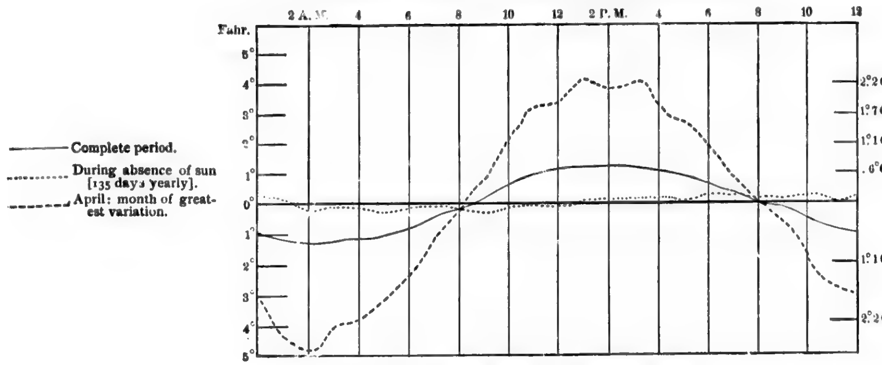
During the presence of the sun hours of maximum range in different months, from 11 a. m. to 4 p. m., but the minima occur more regularly from 12 p. m. to 2 a. m., except March, which falls later.

As can be seen from the above tables the fluctuation during the absence of the sun is entirely accidental.

The following diagram shows the curves for the total period, during the absence of the sun, and for the month (April) of greatest fluctuation.

CHART NO. 11.—*Mean diurnal fluctuations of temperature, by departures, at Fort Conger, 1881–'83.*

Washington mean time. To reduce to local mean time add 49^m



RAPID FLUCTUATIONS OF TEMPERATURE.

The following table, originally prepared at Fort Conger to check erroneous readings of ten degrees, is presented as of interest in showing the comparative freedom of Fort Conger from violent changes of temperature.

The most rapid fluctuation was a rise of 30° [16.7° C.] in sixty-seven minutes, from 6 p. m. to 7.07 p. m., February 16 1882. The reading at 7.07 p. m. was verified by me.

These great changes of temperature are most frequent in March, and are almost unknown from April to August. As might be expected, sudden falls are more frequent than rises.

TABLE LXXIX.—*Temperature changes of 9° and over in one (1) hour.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Dates.	Time.	Temperature	Wind.	Time.	Temperature.	Wind.	Rise.	Fall.	Remarks.
1881.		°			°		°	°	
August	......	......	......	......	......	......	......	......	Greatest +7.5° [+4.17 C.] from 2 to 3 p. m. 5th. Clouds broke away temporarily.
September 10	3 a. m.	7.9	NW., 4.	4 a. m.	19.4	N., 5.	11.5	......	Severe storm. Barometer fell .41 inch [10.41^{mm}] in eight hours.
September 20	10 a. m.	3.7	Calm.	11 a. m.	12.9	E., 2.	9.2	......	Rise of .02 inch [0.51^{mm}] in barometer. Temperature at 3 p. m. —0.1° [—17.8 C.], first reading below zero [—17.8° C.].
October	......	......	......	......	......	......	......	......	Temperature rose 8.5° [4.72 C.] 9 to 10 a. m. 15th; barometer falling slowly.
November 13	4 p. m.	—26.8	E., 1.	5 p. m.	—37.8	Calm.	......	11.0	Temperature at 3 p. m. —34.0° [—36.7° C.]. Barometer steady.
December	......	......	......	......	......	......	......	......	Temperature rose 8.5° [4.72 C.] 5 to 6 p. m. 19th; barometer falling very gradually.
1882.									
January 10	9 a. m.	—57.2	Calm.	10 a. m.	—48.2	Calm.	9.0	......	Barometer rising slowly; but 3 temperatures above — 50.0° [—45.6 C.].
January 16	11 a. m.	—23.4	SW., 13.	Noon.	—13.1	NE., 32.	10.3	......	Violent storm. Barometer fell .741 inch [18.83^{mm}] in 9 hours. NE. 65 miles per hour [29.1^m per second].
January 23	10 a. m.	—40.2	NE., 4.	11 a. m.	—29.4	NE., 4.	10.8	......	Barometer falling steadily.
January 23, 24	Midn't.	—28.8	Calm.	1 a. m.	—39.2	Calm.	......	10.4	
February 16	6 p. m.	—54.1	NE., 1.	7 p. m.	—43.9	NE., 1.	10.2	...	Thermometer No. 707 in open air at instrument shelter rose from —58.0° [—50.0 C.] at 6 p. m. to —40.5° [—40.3 C.] at 7 p. m., and —39.0° [—39.4 C.] at 7.02; rise of 19° [10.56 C.] in 62 minutes. No. 726 on floe rose but 3.2° [1.78 C.] in same hour, as shown by readings made five minutes later in either case. No. 707 indicated a fall of 11.0° [6.11 C.] since 7.02 p. m. Mercury thawed for first time during month shortly after midnight.
	9 p. m.	—45.0	Calm.	10 p. m.	—33.3	NE., 1.	11.7	....	

TABLE LXXIX.—*Temperature changes of 9° and over in one (1) hour*—Continued.

Dates.	Time.	Temperature.	Wind.	Time.	Temperature.	Wind.	Rise.	Fall.	Remarks.
1882.		°			°		°	°	
February 28	4 p. m.	—46.0	Calm.	5 p. m.	—36.6	Calm.	9.4		Barometer rising slowly. Temperature fell 5.5° [3.06 C.] from 5 to 6 p. m.
March 12	4 a. m.	— 9.6	Calm.	5 a. m.	—18.8	E., 4.		9.2	Barometer rising slowly.
March 14	7 a. m.	—35.3	Calm.	8 a. m.	—45.3	Calm.		10.0	Barometer rising slowly.
March 24	2 p. m.	—25.1	Calm.	3 p. m.	—37.6	Calm.		12.5	Barometer rising slowly.
April 5	11 p. m.	—22.6	E., 5.	Midn't.	—33.9	E., 4.		11.3	Barometer stationary.
April 15	10 p. m.	+ 9.6	NE., 13.	11 p. m.	— 1.7	S., 3.		11.3	Barometer falling .23 inch [5.84^{mm}] since 1 a. m.; from 10 a. m. stationary.
April 16	4 a. m.	Zero.	Calm.	5 a. m.	+ 9.6	Calm.	9.6		
April 21	3 a. m.	—25.9	NE., 1.	4 a. m.	—16.5	E., 2.	9.4		Barometer falling slowly.
May									Greatest +6.8° [+3.77 C.] from 4 to 5 a. m. 3d; barometer rising slowly; 4 a. m., NW., 3; 5 a. m., E., 7; 7 a. m., S., 15.
June									Greatest +6.1° [+3.39 C.] from 9 to 10 a. m. 7th; barometer falling slowly; 9 a. m., N., 2; 10 a. m., SE., 2.
July									Greatest +7.9° [+4.39 C.] from 8 to 9 a. m. 20th; barometer rising slowly; 8 a. m., S., 2; 9 a. m., SE., 14.
August									Greatest change —5.4° [—3.00 C.] from 9 to 10 a. m. 1st, and +5.4° [+3.00 C.] from 10 to 11 a. m. 21st.
September									Greatest change —5.0° [—2.78° C.] from 11 to 12 p. m. 30th.
October									Greatest change —5.9° [—3.28° C.] from 10 to 11 p. m. 22d.
November 13	10 a. m.	—21.4		11 a. m.	— 3.7		17.7		Followed the next hour by a rise of 17.4° [9.67° C.].
December 7	11 a. m.	—33.8		Noon.	—20.8		13.0		
	3 p. m.	—20.5		4 p. m.	—30.5			10.0	
December 24	7 p. m.	—20.9		8 p. m.	—11.6		9.3		
1883.									
January									Greatest change —7.5° [—4.17° C.] from 9 to 10 p. m. 21st.
February 14	10 a. m.	—45.2		11 a. m.	—32.9		12.3		Followed the next hour by a rise of 8.1° [4.5° C.].
March 7	4 a. m.	—11.1		5 a. m.	—21.2			10.1	Followed the two succeeding hours by +2.7° [+1.50° C.], and —10.3° [—5.72° C.].
March 8	6 a. m.	— 8.5		7 a. m.	+ 3.3		11.8		
March 14	8 p. m.	—14.1		9 p. m.	+ 1.4		15.5		Followed in succeeding three hours by changes of +7.0° [+3.89° C.], —1.0° [—0.56° C.], and +9.2° [+5°.1 C.].
March 31	11 a. m.	—15.1		Noon.	— 0.9		14.2		Followed the next hour by a fall of 9.3° [5.17° C.].
April 20	9 p. m.	— 9.5		10 p. m.	—19.9			10.4	
May									Greatest change —7.0° [—3.89° C.] from 10 to 11 p. m. 17th.
June									Greatest change +5.8° [+3.22° C.] from 4 to 5 p. m. 2d.
July 12	10 p. m.	49.2		11 p. m.	39.7			9.5	

The following table perhaps conveys to many the character of the weather as regards temperature better than any other could:

TABLE LXXX.—*Hours of temperature at Fort Conger.*

$\phi = 81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881–'82.				1882–'83.			
	Above 32°.	0° to 32°.	Below zero.	Frozen mercury.	Above 32°.	0° to 32°.	Below zero.	Frozen mercury.
August	388	268	0	0	600	144	0	0
September	0	588	132	0	0	720	0	0
October	0	105	639	0	0	149	595	0
November	0	0	720	18	0	0	720	36
December	0	0	744	138	0	7	737	43
January	0	0	744	397	0	0	744	299
February	0	0	672	567	0	0	672	434
March	0	0	744	98	0	24	720	57
April	0	205	515	10	0	35	685	0
May	17	727	0	0	1	638	105	0
June	451	269	0	0	419	301	0	0
July	732	12	0	0	671	73	0	0
Year	1,588	2,174	4,910	1,228	1,691	2,091	4,978	869

MOISTURE OF THE AIR.

The absolute humidity in English inches and the relative humidity are given for August 5, 1881, to include July 31, 1883.

Readings were made of the wet-bulb thermometer four-hourly only, from the fact that hourly readings were not advisable the first year, and later, from the conviction that the observations were practically valueless.

The wet-bulb thermometer was only coated from time to time, as its practically undiminished covering of ice gave testimony, corroborated by other experiments, to the almost absence of evaporation during winter months.

Whether owing to the instrumental errors not eliminated by tests or from actual causes, the wet-bulb readings were for days higher than those of the dry bulb. Such readings have been entirely omitted and may be known by blanks.

The patent Klingerfusser hygrometer furnished the expedition proved utterly worthless, as shown by experiments made within and without doors under widely varied conditions.

The cause of the wet-bulb thermometers reading lower than the dry, is uncertain. It seemed possible that in many cases the film of ice, which covered the wet bulb, made the mercury or spirits of wine expand more slowly to the changes in temperatures, but such reasoning could only apply in one direction.

Prof. H. A. Hazen, in Professional Paper XVIII, has given another, possibly the correct solution, the compression of ice on the wet-bulb, which, by his experiments, was found to be as much as 0.5° [0.28° C.] at zero [−17.8° C.].

To these two causes, added to the extreme difficulty of determining the instrumental error to 0.1° [0.06° C.], may be ascribed the frequency with which the wet bulb read higher at low temperatures than the dry bulb.

AUGUST, 1881.

TABLE LXXXI.—*Absolute and relative humidity of the air at Fort Conger, August, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1														
2														
3														
4														
5	.139	72	.177	80	.170	75	.214	72	.165	78	.150	77	.1692	75.7
6	.162	77	.158	71	.175	71	.209	71	.168	75	.149	74	.1702	73.2
7	.151	78	.170	78	.168	75	.183	79	.145	68	.134	73	.1585	75.2
8	.122	70	.155	86	.150	77	.170	86	.178	77	.132	76	.1512	78.7
9	.116	62	.158	83	.149	74	.146	76	.146	72	.158	83	.1455	75.0
10	.168	81	.175	80	.173	79	.172	75	.180	80	.162	77	.1717	78.7
11	.158	73	.162	76	.158	74	.179	75	.177	72	.196	82	.1717	75.3
12	.187	73	.175	69	.164	64	.219	74	.214	72	.200	68	.1932	70.0
13	.201	70	.194	70	.206	72	.192	70	.182	64	.222	75	.1995	70.2
14	.172	67	.194	70	.171	65	.171	65	.198	68	.183	71	.1815	67.7
15	.171	74	.179	71	.197	83	.183	71	.183	68	.196	79	.1848	74.3
16	.170	73	.163	71	.172	71	.186	72	.178	72	.183	80	.1753	73.2
17	.175	80	.164	75	.161	72	.175	71	.164	75	.143	73	.1637	74.3
18	.139	74	.137	71	.156	71	.153	70	.162	77	.137	76	.1473	73.2
19	.119	77	.134	87	.143	86	.133	81	.124	82	.120	88	.1288	83.5
20	.104	83	.115	88	.134	87	.128	76	.139	81	.142	85	.1270	83.3
21	.134	76	.154	85	.167	85	.165	81	.162	77	.136	77	.1530	80.2
22	.131	78	.143	77	.150	77	.149	81	.142	82	.146	86	.1435	80.2
23	.129	75	.147	82	.146	76	.149	83	.139	81	.130	81	.1400	79.7
24	.129	82	.134	87	.134	85	.134	87	.124	84	.124	87	.1298	85.3
25	.122	86	.117	77	.129	84	.130	84	.122	82	.114	77	.1223	81.7
26	.116	79	.119	77	.134	71	.124	73	.114	77	.120	77	.1212	75.7
27	.112	80	.120	88	.128	81	.137	86	.137	86	.136	87	.1283	84.7
28	.120	88	.109	82	.114	77	.110	77	.114	78	.112	82	.1132	80.7
29	.112	79	.117	72	.126	71	.128	76	.127	82	.115	82	.1208	77.0
30	.106	83	.117	72	.126	71	.133	81	.115	82	.110	77	.1178	77.7
31	.116	80	.118	86	.119	77	.104	71	.090	75	.083	84	.1050	78.8
Means	.1400	76.7	.1483	78.2	.1526	76.0	.1584	76.4	.1514	76.6	.1457	79.0	.1494	77.2

SEPTEMBER, 1881.

TABLE LXXXII.—*Absolute and relative humidity of the air at Fort Conger, September, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.072	81	.112	82	.105	78	.114	78	.108	83	.098	83	.1015	80.8
2	.093	79	.091	75	.124	87	.108	80	.098	83	.081	78	.0992	80.3
3	.076	82	.094	75	--------	--------	.114	77	.091	79	.088	81	.0926	78.8
4	.061	72	.094	75	.124	87	.128	87	.087	86	.106	89	.1000	82.7
5	.090	86	.078	87	.094	81	.090	81	.084	78	.079	74	.0858	81.2
6	.078	82	.085	86	.090	81	.084	81	.074	80	.086	86	.0828	82.7
7	.094	81	.112	82	.109	80	.101	83	.099	87	.094	86	.1015	83.2
8	.088	85	.093	86	.112	89	.084	84	.079	82	.081	85	.0895	85.2
9	.079	82	.084	81	.106	83	.069	80	.065	80	.058	81	.0768	81.2
10	.049	76	.097	71	.100	84	.080	82	.072	81	.062	80	.0767	79.0
11	.063	80	.065	80	.090	75	.072	81	.072	87	.081	80	.0738	80.5
12	.082	82	.076	70	.090	81	.098	83	.082	80	.076	81	.0840	79.5
13	.073	83	.059	69	.068	80	.069	80	.065	80	.058	77	.0653	78.2
14	.060	82	.064	73	.082	85	.094	81	.082	88	.066	80	.0747	81.5
15	.070	81	.067	83	.078	83	.078	82	.070	85	.054	70	.0695	80.7
16	.045	67	.049	70	.099	75	.076	82	.062	80	.072	87	.0672	76.8
17	.071	83	.064	82	.071	83	.068	83	.067	85	.071	89	.0687	84.2
18	.069	83	.066	80	.069	82	.071	83	.065	80	.068	80	.0680	81.3
19	.069	83	.058	82	.058	83	.045	76	.053	89	.050	78	.0555	81.8
20	.058	81	.045	71	.062	77	--------	--------	.035	95	.031	98	.0462	84.4
21	.030	95	.032	100	.038	79	.033	77	.042	95	.035	95	.0350	90.2
22	.033	83	.029	86	.035	83	.032	72	.036	96	.033	91	.0330	85.2
23	.034	90	.043	95	.045	88	.043	82	.048	76	.043	79	.0427	85.0
24	.044	88	.040	86	.050	87	.048	91	.037	87	.040	95	.0432	89.0
25	.039	100	--------	--------	.038	95	.039	100	.040	100	.033	91	.0378	97.2
26	.039	100	.031	100	.034	95	.034	100	.035	93'	.039	98	.0353	97.7
27	--------	--------	--------	--------	.050	91	.052	92	.056	100	.052	92	.0525	93.8
28	--------	--------	.046	93	.045	79	.041	79	.049	93	.048	80	.0458	84.8
29	.061	98	.047	93	.040	98	.032	100	.034	95	.033	95	.0412	96.5
30	--------	--------	.036	80	.053	100	.052	97	.050	91	.048	86	.0478	90.8
Means	.0637	83.9	.0667	81.9	.0744	84.4	.0707	83.9	.0646	86.5	.0621	84.8	.0665	84.5

OCTOBER, 1881.

TABLE LXXXIII.—*Absolute and relative humidity of the air at Fort Conger, October, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = 4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.053	92	.052	94	.052	92	.052	94	.043	78	.043	78	.0492	88.0
2	.049	87	.059	[illegible]	.053	87	.056	92	.051	80	.048	80	.0527	87.3
3	.047	74	.042	88	.041	98	.031	100			.022	90	.0366	90.0
4	.026	86			.029	86	.022	90			.021	86	.0245	87.0
5	.022	100	.020	76	.023	82	.025	86	.022	82	.034	95	.0243	86.8
9	.029	86	.023	78	.028	100	.021	82	.022	78			.0246	84.8
7	.037	85	.038	79	.034	76	.052	89	.046	80	.047	93	.0423	83.7
8	.042	79	.046	94	.045	93	.043	93	.028	71	.026	78	.0383	84.7
9	.031	91	.014	62	.025	78	.032	89	.038	100	.034	95	.0290	85.8
10			.036	91	.033	100	.028	80	.030	100	.022	82	.0298	90.6
11	.023	78	.034	100	.024	78	.026	91	.022	82	.020	82	.0248	85.2
12	.023	100	.023	100	.019	79	.017	77					.0205	89.0
13					.009	56	.013	85	.007	40	.011	40	.0100	57.5
14	.008	44	.009	47	.014	85	.013	85	.010	58			.0108	63.8
15	.019	79	.015	79	.008	46	.018	84	.015	79	.007	47	.0137	69.0
16	.006	39	.006	45	.006	43	.008	70	.011	68	.014	78	.0085	57.2
17	.013	67	.018	84	.013	59	.010	68	.014	100	.007	49	.0125	71.2
18	.010	80	.007	64	.004	21	.009	100	.007	69	.011	90	.0080	70.7
19	.011	82	.015	79	.018	92	.010	57	.009	47	.014	85	.0128	73.7
20	.018	84	.019	84	.024	86	.020	69	.026	78	.026	78	.0222	79.8
21	.036	96	.030	83	.022	78	.022	83	.026	78	.010	95	.0293	85.3
22	.025	64	.022	82	.024	90	.022	78	.017	83	.021	95	.0218	82.0
23	.017	77	.018	77	.023	78					.021	82	.0198	78.5
24	.022	78	.028	81	.023	78	.022	82	.031	91	.030	79	.0260	81.5
25	.027	71	.031	83	.027	90	.040	95	.008	19	.034	87	.0278	74.2
26	.052	92	.042	85	.031	83	.027	86	.041	95	.028	80	.0368	86.8
27	.024	78	.032	78	.023	78	.026	78	.033	100	.042	95	.0300	84.5
28	.035	95	.030	66	.037	95	.037	98	.040	98	.030	100	.0348	92.0
29	.026	78	.033	100	.033	100	.031	100	.029	100	.031	100	.0305	96.3
30	.033	95	.033	100	.028	80	.028	80	.028	80	.033	83	.0305	86.3
31	.034	95	.034	100	.024	82	.031	100	.024	86	.027	100	.0290	93.8
Means	.0275	[illegible]	.0279	82.0	.0257	79.7	.0264	85.3	.0251	78.5	.0266	83.2	.0262	81.5

NOVEMBER, 1881.

TABLE LXXXIV.—*Absolute and relative humidity of the air at Fort Conger, November,* 1881.

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.031	100	.025	91	.034	100			.031	100	.028	86		
2	.028	91	.018	91	.034	100	.032	91	.027	86	.029	91	.0280	91.7
3	.032	100	.027	100					.021	82	.022	82		
4	.023	78	.023	86	.021	90	.019	84	.022	90	.017	77	.0208	84.2
5	.014	78	.009	66	.011	61	.016	71	.019	84	.019	79	.0147	73.2
6	.020	76	.023	71	.027	86	.026	78	.031	100	.023	86	.0250	82.8
7	.024	100	.019	84	.021	86	.022	82	.022	78	.022	78	.0217	84.7
8	.023	78	.022	78	.022	82	.021	82	.021	82	.017	77	.0210	79.8
9	.014	71	.011	59	.010	68	.007	50			.007	77		
11									.008	70	.008	72		
12	.005	46								5	.004	25		
13	.004	26	.010	89										
15					.005	35	.004	26	.003	5	.005	24		
16	.005	30	.014	78	.020	82	.018	84	.018	92	.008	49	.0138	69.2
17	.005	36							.005	46	.011	90		
18	.012	100	.005	46	.004	22	.006	48	.005	36	.006	47	.0063	49.8
19	.008	59	.009	56	.006	43	.006	34	.019	79	.018	84	.0110	59.2
20	.006	43	.013	85	.006	43	.012	66	.013	68	.011	52	.0102	59.5
21	.008	44	.009	59	.003	14								
22			.005	44	.009	100								
24									.006	59	.006	48		
25	.005	46	.004	18			.003	6						
26					.005	43								
27	.009	100												

TABLE LXXXV.—DECEMBER, 1881.

Date.	3 a. m. Absolute.	3 a. m. Relative.	7 a. m. Absolute.	7 a. m. Relative.	11 a. m. Absolute.	11 a. m. Relative.	3 p. m. Absolute.	3 p. m. Relative.	7 p. m. Absolute.	7 p. m. Relative.	11 p. m. Absolute.	11 p. m. Relative.	Daily means Absolute.	Daily means Relative.
1					.003	8								
2					.017	82	.022	82						
3									.005	28				
4					.011	90	.014	85	.018	84	.017	77		
5	.008	50	.007	46	.011	90	.014	100	.006	44				
9							.007	59						
10	.006	47	.009	68			.004	16	.010	89				
13	.008	80	.009	88					.008	80	.004	18		
14	.006	47	.002		.007	62								
22					.006	49								
23			.006	46	.008	65	.006	41	.004	22	.004	23		
24	.006	47	.006	47	.006	47	.009	72						
25							.006	48			.004	21		
26	.005	34	.005	34	.003	8	.007	50	.004	22	.005	28	.048	29.3
27	.010	100												
31									.008	71	.013	100		

JANUARY, 1882.

TABLE LXXXVI.—*Absolute and relative humidity of the air at Fort Conger, January, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1					.011	78								
2	.012	92	.005	33					.004	38	.00[illegible]	19		
3	.006	48	.010	92										
4											.01[illegible]	100		
5	.005	35												
15									.005	35				
16									.022	100	.013	76		

TABLE LXXXVII.—FEBRUARY, 1882.

Date.	3 a. m. Absolute.	3 a. m. Relative.	7 a. m. Absolute.	7 a. m. Relative.	11 a. m. Absolute.	11 a. m. Relative.	3 p. m. Absolute.	3 p. m. Relative.	7 p. m. Absolute.	7 p. m. Relative.	11 p. m. Absolute.	11 p. m. Relative.	Daily means. Absolute.	Daily means. Relative.
25			.008	59	.009	53					.018	100		
26					.006	52	.006	52						

TABLE LXXXVIII.—MARCH, 1882.

Date.	3 a. m. Absolute.	3 a. m. Relative.	7 a. m. Absolute.	7 a. m. Relative.	11 a. m. Absolute.	11 a. m. Relative.	3 p. m. Absolute.	3 p. m. Relative.	7 p. m. Absolute.	7 p. m. Relative.	11 p. m. Absolute.	11 p. m. Relative.	Daily means. Absolute.	Daily means. Relative.
1					.013	78					.005	36		
2									.003	8				
6			.011	100										
9									.011	100	.009	80		
10			.013	85	.007	50	.008	46	.009	68	.013	72		
11	.016	86	.020	90	.015	62	.021	86	.019	70	.019	81	.0183	79.2
12	.027	91	.008	45	.011	68	.007	59	.004	18	.011	100	.0113	63.5
18					.003	5	.006	50	.006	57	.008	80		
19	.004	21	.003	11	.006	46	.003	11						
20					.005	27	.008	52	.014	70	.018	83		
21	.025	100	.028	95	.021	74	.020	82	.008	45	.006	48	.0180	74.0
30									.025	86				
31	.022	86	.019	83	.019	79	.011	61						

APRIL, 1882.

TABLE LXXXIX.—*Absolute and relative humidity of the air at Fort Conger, April, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
5	.006	43	.009	44	.019	84	.013	58	.007	50	.003	11	.0095	48.3
6	------	------	------	------	.009	72	.004	22	.006	46	.009	80	------	------
7	------	------	------	------	.012	72	.011	52	.005	24	.006	35	------	------
8	.014	78	.023	82	.012	37	.032	72	.044	82	.048	74	.0288	70.8
9	.053	85	.042	82	.038	69	.042	85	.023	64	.022	82	.0367	77.8
10	.019	69	.024	86	.021	66	.022	64	.037	85	.039	87	.0270	76.2
11	.047	91	.050	82	.071	100	.051	79	.037	76	------	------	.0505	88.0
12	.025	86	.035	95	.036	83	.034	79	.027	66	.032	78	.0315	81.2
13	.037	85	.044	91	.042	88	.042	82	.028	79	.023	74	.0360	83.2
14	.031	87	.040	95	.030	62	.030	65	.031	79	.031	91	.0322	79.8
15	.022	74	.033	87	.034	72	.028	57	------	------	.028	68	------	------
16	.031	87	.048	85	.066	89	.067	87	------	------	.026	71	------	------
17	.021	86	.024	69	.027	65	.040	82	.044	88	.029	91	.0308	80.2
18	.020	63	.024	78	.029	85	.029	79	.023	78	.024	86	.0248	78.2
19	.024	82	.024	78	.027	82	.024	74	.020	85	.014	62	.0222	77.2
20	.019	84	.021	74	.024	[illegible]	------	------	.022	95	.012	76	------	------
21	.006	43	.005	28	.017	77	.024	86	.023	78	.029	79	.0173	65.2
22	.039	85	.054	89	.064	94	.060	82	.065	93	.053	85	.0558	88.0
23	.060	85	.057	79	.033	66	.051	78	.042	77	.031	79	.0457	77.3
24	.034	83	.034	87	.036	69	.052	87	.057	98	.053	85	.0443	84.8
25	.049	72	.048	85	.049	82	.046	83	.028	68	.024	74	.0407	77.3
26	.023	78	.024	74	.042	95	.043	98	.035	87	.013	48	.0300	80.0
27	.023	82	.023	78	.027	86	.034	87	.019	64	.020	76	.0243	78.8
28	.018	84	.019	68	.031	95	.037	95	.026	82	.021	76	.0253	83.3
29	.018	83	.018	63	.030	95	.040	87	.028	69	.024	74	.0263	78.5
30	.020	69	.032	87	.028	62	.038	75	.046	78	.040	72	.0340	73.8

MAY, 1882.

TABLE XC.—*Absolute and relative humidity of the air at Fort Conger, May, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.043	78	.046	76	.043	64	.058	67	.053	74	.049	78	.0487	72.8
2	.051	80	.061	85	.073	78	.074	78	.080	77	.075	80	.0690	79.7
3	.079	83	.124	87	.115	79	.016	75	.086	69	.072	70	.0820	77.2
4	.079	82	.089	81	.082	70	.084	74	.066	82	.056	82	.0760	78.5
5	.049	80	.054	82	.061	78	.072	78	.080	88	.061	85	.0628	81.8
6	.054	82	.064	82	.069	68	.082	66	.080	77	.073	80	.0703	75.8
7	.072	83	.079	80	.090	71	.085	75	.084	79	.062	85	.0787	78.8
8	.069	87	.072	85	.050	59	.056	72	.060	83	.050	82	.0595	78.0
9	.047	80	.049	82	.045	62	.047	64	.052	75	.043	79	.0472	73.7
10	.046	85	.048	80	.049	82	.054	73	.052	75	.054	81	.0505	79.3
11	.044	85	.046	83	.047	69	.056	85	.064	97	.053	85	.0517	84.0
12	.056	87	.057	83	.053	70	.051	72	.064	82	.071	91	.0587	80.8
13	.071	85	.083	88	.089	82	.097	84	.091	85	.078	80	.0848	84.0
14	.068	80	.084	84	.072	76	.084	74	.094	88	.072	87	.0790	81.5
15	.037	51	.068	78	.072	67	.086	75	.092	81	.097	86	.0753	73.0
16	.083	85	.082	88	.064	74	.051	62	.070	87	.067	82	.0695	79.7
17	.064	82	.066	78	.072	73	.082	79	.053	85	.077	83	.0690	80.0
18			.076	80	.081	81	.086	81	.051	74	.078	89		
19	.056	74	.072	81	.070	68	.087	72	.059	85	.084	85	.0713	77.5
20	.073	82	.088	85	.081	74	.081	68	.056	74	.085	81	.0773	77.3
21	.098	84	.109	88	.132	82	.130	84	.108	81	.085	86	.1103	84.2
22	.035	36	.090	85	.107	82	.102	75	.110	85	.108	85	.0920	74.7
23	.100	85	.115	86	.104	82	.108	86	.083	77	.078	84	.0980	83.3
24	.064	82	.072	83	.078	78	.103	82	.098	83	.085	84	.0833	82.0
25	.080	85	.082	86	.088	82	.101	75	.083	82	.080	84	.0857	82.3
26	.061	78	.090	81	.100	73	.116	80	.092	71	.099	75	.0930	76.3
27	.114	83	.125	83	.129	76	.130	78	.136	87	.134	87	.1280	82.3
28	.126	83	.137	84	.146	77	.130	67	.133	73	.137	82	.1348	77.7
29	.128	78	.155	83	.152	77	.154	78	.137	74	.130	86	.1427	79.3
30	.116	84	.109	86	.104	83	.101	83	.094	81	.087	85	.1018	83.7
31	.088	85	.090	75	.092	73	.087	75	.086	79	.085	79	.0880	77.7
Means	....	....	.0833	82.8	.0842	74.5	.0855	75.4	.0822	80.3	.0795	82.8	.0811	79.4

JUNE, 1882.

TABLE XCI.—*Absolute and relative humidity of the air at Fort Conger, June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\varphi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.077	81	.083	82	.097	76	.098	71	.095	76	.089	81	.0898	77.8
2	.078	81	.079	77	.096	78	.088	79	.083	82	.078	81	.0837	79.7
3	.069	80	.077	81	.085	77	.100	78	.091	72	.092	77	.0857	77.5
4	.088	82	.124	76	.124	81	.121	71	.120	81	.114	82	.1152	78.8
5	.094	72	.112	86	.108	80	.120	82	.111	80	.082	81	.1045	80.2
6	.084	83	.089	84	.103	82	.111	85	.111	90	.094	81	.0987	84.2
7	.087	83	.084	73	.120	77	.142	87	.121	74	.126	87	.1133	80.2
8	.121	84	.123	80	.106	70	.154	86	.114	67	.121	77	.1232	77.3
9	.122	83	.130	82	.168	82	.139	70	.137	71	.125	66	.1368	75.7
10	.146	78	.120	77	.134	68	.140	67	.137	74	.124	66	.1335	71.7
11	.130	83	.121	78	.156	82	.160	77	.146	79	.148	78	.1435	79.5
12	.145	77	.149	81	.159	78	.155	83	.148	77	.152	82	.1513	79.7
13	.143	78	.155	81	.155	76	.154	69	.163	80	.152	73	.1537	76.2
14	.168	79	.173	86	.170	84	.180	84	.170	84	.164	84	.1708	83.5
15	.158	85	.164	85	.168	84	.164	85	.165	87	.168	89	.1645	85.8
16	.165	85	.170	83	.162	86	.176	86	.165	85	.161	87	.1665	85.3
17	.151	84	.136	78	.138	78	.135	87	.131	84	.126	81	.1362	82.0
18	.128	86	.132	85	.130	82	.138	87	.142	86	.134	87	.1340	85.5
19	.133	82	.142	83	.175	79	.182	83	.155	79	.146	78	.1555	80.7
20	.143	78	.148	77	.163	83	.155	77	.151	76	.149	76	.1515	77.8
21	.145	76	.149	73	.168	74	.177	80	.171	76	.173	72	.1638	75.2
22	.203	80	.213	73	.200	84	.208	80	.184	79	.200	73	.2013	78.2
23	.233	87	.200	80	.181	87	.200	89	.192	87	.185	80	.1985	85.0
24	.185	80	.189	80	.177	75	.187	71	.183	80	.183	78	.1840	77.3
25	.181	72	.183	76	.192	81	.177	69	.190	80	.177	85	.1833	77.2
26	.178	80	.190	80	.194	74	.189	66	.183	80	.182	77	.1860	76.2
27	.185	81	.183	72	.190	67	.188	66	.178	62	.174	56	.1830	67.3
28	.200	70	.289	88	.217	63	.211	64	.211	67	.206	74	.2223	71.0
29	.218	82	.213	84	.214	79	.188	61	.185	61	.195	67	.2022	72.3
30	.210	63	.212	68	.219	58	.210	57	.208	64	.190	63	.2082	62.2
Means	.1456	79.8	.1511	79.6	.1556	77.5	.1582	76.6	.1514	77.3	.1470	77.3	.1515	78.0

JULY, 1882.

TABLE XCII.—*Absolute and relative humidity of the air at Fort Conger, July, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.209	66	.218	63	.185	77	.209	89	.194	88	.185	87	.2000	78.3
2	.175	87	.178	89	.188	92	.187	86	.168	81	.183	89	.1798	87.3
3	.175	87	.175	86	.177	83	.180	78	.171	83	.167	87	.1742	84.0
4	.165	84	.164	89	.167	82	.161	69	.159	77	.159	80	.1625	80.2
5	.164	84	.159	75	.180	74	.173	70	.173	66	.176	79	.1708	74.7
6	.182	77	.190	69	.180	72	.187	71	.174	57	.173	67	.1810	68.8
7	.183	67	.175	72	.190	64	.192	74	.223	81	.183	71	.1910	71.5
8	.184	70	.183	75	.198	85	.186	77	.189	67	.184	78	.1873	75.3
9	.175	83	.159	70	.170	93	.162	78	.179	79	.162	88	.1678	81.8
10	.162	95	.167	74	.179	81	.175	79	.161	79	.151	78	.1658	81.0
11	.161	87	.160	85	.163	89	.151	84	.175	96	.151	84	.1602	87.5
12	.144	84	.155	92	.165	91	.161	74	.156	84	.142	70	.1538	82.5
13	.170	84	.168	85	.159	74	.157	61	.183	76	.178	77	.1692	76.2
14	.190	87	.186	91	.192	88	.188	90	.184	93	.181	84	.1868	88.8
15	.200	82	.190	81	.194	82	.184	71	.191	73	.178	73	.1895	77.0
16	.183	76	.187	71	.194	73	.183	86	.173	76	.181	87	.1835	78.2
17	.183	88	.175	86	.194	83	.182	85	.177	90	.175	93	.1810	87.5
18	.177	91	.200	86	.198	72	.206	85	.199	89	.187	83	.1945	84.3
19	.174	87	.166	84	.177	83	.187	77	.175	86	.173	89	.1753	84.3
20	.164	85	.159	82	.176	68	.179	80	.170	87	.173	89	.1702	81.8
21	.170	90	.170	87	.176	80	.171	75	.177	88	.171	84	.1725	84.0
22	.171	87	.175	87	.177	76	.174	75	.178	87	.175	87	.1750	83.2
23	.170	87	.170	89	.175	86	.179	88	.186	86	.178	89	.1763	87.5
24	.175	87	.177	88	.188	79	.184	78	.181	88	.182	89	.1812	84.8
25	.187	90	.180	84	.185	84	.197	75	.163	71	.190	81	.1837	80.8
26	.194	86	.207	90	.180	70	.209	77	.177	73	.173	80	.1900	79.3
27	163	76	.189	76	.165	77	.168	82	.147	62	.140	63	.1620	72.7
28	.159	74	.177	74	.162	74	.154	70	.164	80	.162	82	.1630	75.7
29	.156	85	.168	88	.173	86	.185	87	.176	90	.171	90	.1715	87.7
30	.173	86	.175	89	.164	84	.164	81	.162	81	.165	78	.1672	83.2
31	.163	84	.161	82	.161	82	.165	69	.145	74	.134	74	.1548	77.5
Means	.1742	83.3	.1762	81.9	.1785	80.1	.1787	78.1	.1752	80.3	.1704	81.6	.1755	80.9

AUGUST, 1882.

TABLE XCIII.—*Absolute and relative humidity of the air at Fort Conger, August, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5^m].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.153	77	.119	55	.160	77	.172	73	.167	76	.178	86	.1582	74.0
2	.159	81	.176	89	.162	78	.166	82	.170	77	.169	80	.1670	81.2
3	.173	82	.168	84	.177	83	.173	87	.168	83	.160	83	.1698	83.7
4	.150	78	.151	81	.175	85	.158	73	.166	81	.170	88	.1617	81.0
5	.190	79	.175	79	.188	78	.183	79	.192	78	.192	80	.1867	78.8
6	.177	75	.183	78	.187	83	.180	84	.170	85	.161	80	.1763	80.8
7	.165	85	.163	84	.162	82	.165	81	.164	85	.158	95	.1628	85.3
8	.149	81	.159	86	.164	80	.163	82	.175	73	.172	73	.1637	79.2
9	.170	73	.162	71	.175	68	.168	78	.175	86	.174	93	.1703	78.2
10	.168	93	.168	93	.168	93	.166	88	.154	82	.183	93	.1678	90.3
11	.183	90	.200	87	.175	61	.170	61	.187	73	.175	75	.1817	74.5
12	.169	73	.200	84	.162	63	.159	61	.165	70	.169	75	.1707	71.0
13	.160	71	.164	73	.164	67	.196	76	.168	65	.159	66	.1685	69.7
14	.156	66	.159	63	.164	63	.187	72	.164	64	.161	67	.1652	65.8
15	.161	71	.190	89	.173	76	.185	81	.185	77	.181	78	.1792	78.7
16	.175	82	.197	80	.199	70	.175	78	.202	83	.176	87	.1873	80.0
17	.173	74	.195	84	.192	92	.180	90	.184	89	.179	90	.1838	86.5
18	.187	97	.186	93	.177	89	.184	81	.184	85	.175	88	.1822	88.8
19	.198	84	.195	77	.200	76	.211	76	.200	76	.196	80	.2000	78.2
20	.202	84	.180	84	.195	88	.197	81	.185	80	.179	79	.1897	82.7
21	.183	78	.162	66	.161	54	.161	71	.162	72	.152	79	.1635	70.0
22	.154	82	.167	73	.173	75	.169	74	.154	79	.155	88	.1620	78.5
23	.158	85	.184	90	.176	90	.175	89	.170	86	.171	88	.1723	88.0
24	.160	84	.154	75	.156	72	.162	86	.147	76	.144	75	.1538	78.0
25	.143	74	.149	77	.151	85	.165	87	.145	75	.131	83	.1473	80.2
26	.123	73	.134	75	.142	86	.142	80	.130	83	.116	77	.1312	79.0
27	.132	85	.134	84	.143	88	.139	86	.133	82	.134	86	.1358	85.2
28	.134	86	.142	85	.140	74	.140	88	.138	81	.145	89	.1398	83.8
29	.120	77	.134	77	.148	86	.156	90	.151	85	.130	82	.1398	82.8
30	.134	84	.124	82	.135	87	.126	81	.122	83	.114	82	.1258	83.2
31	.113	78	.125	86	.124	84	.120	83	.111	80	.112	86	.1175	82.8
Means	.1604	80.1	.1645	80.1	.1667	78.5	.1675	80.0	.1641	79.0	.1604	82.3	.1639	80.0

SEPTEMBER, 1882.

TABLE XCIV.—*Absolute and relative humidity of the air at Fort Conger, August, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5^{m}].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1			.118	96	.124	94			.122	100				
2			.124	99	.128	94					.132	98		
3	.036	25	.133	95	.141	98	.142	98	.140	97	.134	99	.1210	85.3
4					.142	99	.128	96	.131	98	.134	100		
5	.136	99	.137	100	.134	96	.126	95	.112	96	.108	97	.1255	97.2
6	.120	96					.126	99	.117		.116	89		
7	.122	100					.108	98	.112	100	.094	89		
8							.099	91	.083	78	.087	92		
9							.100	100	.083	93	.082	95		
10	.098	94			.116	100	.103	97	.098	98	.083	97		
11	.123	92	.098	88	.112	90	.113	87						
12	.084	93	.053	89	.118	100			.109	100	.112	100		
13			.116	100	.118	99								
14	.102	92	.099	95	.092	100					.079	100		
15							.102	98						
16	.078	92	.082	100	.095	98					.100	91		
17	.104	90	.112	94	.116	97	.118	99	.112	100	.108	98	.1117	96.3
18					.088	96	.085	90						
19					.061	100	.058	89			.060	93		
21					.048	100	.080	100			.084	98		
22	.088	82	.094	89	.053	75	.104	95						
23	.106	97	.114	100	.098	87	.093	75	.124	93	.116	99	.1085	91.8
24	.102	98					.098	95			.070	92		
25	.063	92												
26	.070	96									.083	85		
27							.130	99	.134	99				
28	.123	100	.123	100			.126	96	.121	92	.096	72		
29	.120	94												
30			.073	94										

OCTOBER, 1882.

TABLE XCV.—*Absolute and relative humidity of the air at Fort Conger, October, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.066	89	.064	85	.062	83	.040	65	.036	63	.052	87	.0533	78.7
2	.051	87	.037	54	.066	93	.061	88	.068	98	.059	82	.0570	83.7
3	.046	64	.057	78	.062	92	.059	87	.051	87	.044	82	.0532	81.7
4	.038	77	.035	69	.046	85	.024	53	.027	62	.034	87	.0340	72.2
5	.034	95	.044	95			.028	95						
6	.026	91			.028	78	.032	91	.026	78	.031	89		
7	.033	100			.031	100	.024	86	.024	78	.024	86		
8	.020	69	.021	70	.023	78	.025	95	.024	90	.025	82	.0230	80.7
9	.024	86	.021	77			.022	78	.028	91	.022	78		
10	.011	36	.032	89	.035	84	.042	91	.048	91	.046	80	.0357	78.5
11	.040	79	.037	79	.038	91	.043	85	.042	79	.033	78	.0388	81.8
12	.032	91	.032	91	.033	83	.030	91	.029	91	.039	91	.0325	89.7
13	.044	98	.040	100	.039	87	.043	85	.042	85	.038	79	.0410	89.0
14	.038	79	.044	95	.039	90	.038	91	.037	83	.038	87	.0390	87.5
15	.044	95	.039	87	.039	91	.037	87	.035	91	.037	95	.0385	91.0
16	.033	87	.030	95	.023	82			.027	100	.024	90		
17	.027	100	.016	71	.018	92	.005	19	.023	100	.024	100	.0188	80.3
18	.023	74	.010	34	.017	77	.016	71			.024	100		
19	.012	50			.014	78	.014	74						
20			.014	90	.028	86	.028	85	.029	83	.032	78		
21	.036	87	.013	78	.010	84	.011	100	.013	69	.020	95	.0172	85.5
22	.021	90	.012	82	.026	78	.026	86	.022	86	.025	82	.0220	84.0
23	.018	70	.013	77	.029	100	.033	100	.026	86			.0237	88.8
24	.020	90	.017	81	.018	92	.008	50	.011	70	.010	50	.0140	72.2
25	.014	74			.009	47	.018	77	.014	78			.0140	79.3
26	.016	86	.011	94	.018	84			.015	63			.0175	87.8
27	.020	82	.013	100					.022	82	.024	84	.0222	91.3
28	.020	90	.017	77	.013	85			.016	86	.023	100	.0175	89.7
29	.018	89	.011	61	.013	79	.018	100	.020	95	.018	92	.0163	86.0
30	.011	64	.014	71	.014	75	.013	73	.018	88	.016	81	.0143	75.3
31	.016	85			.024	90	.030	100	.031	100	.029	91	.0257	94.3
Means													.0280	84.8

TABLE XCVI.—NOVEMBER, 1882.

1	.032	100	.027	86	.022	90	.023	100	.021	95	.023	95	.0245	94.3
2	.018	92	.013	85	.008	50	.013	85	.013	92	.006	34	.0118	73.0
3	.014	78	.011	82	.021	100	.018	77	.022	90	.024	100	.0183	87.8
4	.018	84	.015	71	.019	83	.019	83	.014	85	.013	85	.0163	81.8
5	.003	15	.006	48					.008	69	.007	69		
6					.004	30	.011	90	.007	50	.007	50		
7	.006	42	.013	85	.007	54	.006	59						

DECEMBER, 1882.

TABLE XCVII.—*Absolute and relative humidity of the air at Fort Conger, December, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1											.004	41		
2	.003	30												
3			.005	66	.007	100	.008	100	.006	73	.005	55		
4	.005	51									.006	70		
5	.006	64					.008	100			.004	43		
6	.005	60	.005	58			.006	62	.007	74				
7	.004	36									.007	85		
8					.006	69			.003	16				
9	.007	86					.004	60						
10			.008	89	.003	16								
11			.010	100										
12			.011	76	.006	61	.006	100						
13	.004	28					.003	9	.006	67				
14	.006	61	.005	45										
15	.006	48	.012	100										
16									.002	7	.008	100		
17			.008	100			.002	7	.007	86				
18							.006	59	.006	54				
20											.012	85		
21									.003	.24	.003	16		
22	.008	80									.012	100		
23									.009	100				
24							.015	92						
25	.035	95					.049	100						
27			.006	74			.006	70			.006	82		
31					.005	66					.004	73		

TABLE XCVIII.—JANUARY, 1883.

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.004	57												
2	.007	100												
3	.005	64												
5					.011	90	.013	92						
6			.012	100					.009	80				
7	.009	100			.007	100				100				
8	.004	41	.006	82	.006	68					.006	68		
9	.005	47	.003	9					.006	61	.003	11		
11									.006	77				
12							.009	100			.003			
13					.005	76		12						
14											.004	45		
15					.005	100								
17	.003	29							.006	100	.006	100		
20											.008	100		
21	.005	49	.004	27			.007	76						
22	.006	82	.007	100					.007	85	.005	46		
23	.009	100	.009	100	.009	100			.004	45				
26			.006	100					.010	100				
27	.008	72	.008	64	.008	80	.004	34						
28	.006	70	.006	58	.010	80	.007	53	.012	100				
29	.008	80	.008	80	.006	51	.003	15						
30	.007	74	.008	80	.005	40	.006	55	.007	69	.008	89	.0068	67.8
31	.007	74			.006	82								

FEBRUARY, 1883.

TABLE XCIX.—*Absolute and relative humidity of the air at Fort Conger, February, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
8											.006	82		
9									.003	13	.005	68		
10	.006	82												
11											.004	21		
12	.008	89	.004	9	.011	90	.013	100	.006	54				
13	.004	45			.009	89			.005	58				
14			.005	100										
17											.005	78		
18									.005	100				
19			.006	82			.008	87			.009	80		
20	.008	72					.018	92	.021	100				
21			.017	70	.020	76	.018	70						
22	.013	65	.019	84	.019	94	.018	83	.021	100	.011	90	.0168	86.0

TABLE C.—MARCH, 1883.

Date.	3 a. m. Absolute.	3 a. m. Relative.	7 a. m. Absolute.	7 a. m. Relative.	11 a. m. Absolute.	11 a. m. Relative.	3 p. m. Absolute.	3 p. m. Relative.	7 p. m. Absolute.	7 p. m. Relative.	11 p. m. Absolute.	11 p. m. Relative.	Daily means Absolute.	Daily means Relative.
2			.004	39			.008	88	.005	49	.005	68		
3											.006	82		
4	.006	82												
6									.010	64	.023	95		
7			.007	67							.011	64		
8	.020	95			.041	87								
9	.017	70	.009	72										
10			.005	67	.005	41	.005	57	.007	100	.006	82		
11	.006	82	.005	57	.006	74			.005	28	.005	27		
12	.004	22	.008	50	.013	78	.020	90	.011	58	.010	62	.0110	58.3
13	.013	85	.012	90	.009	80			.010	68	.011	76		
14			.010	53	.018	88	.022	95	.012	58				
15											.024	95		
16	.014	71	.019	100			.022	100	.013	72	.020	100		
17	.018	92	.013	72			.023							
18			.016	81	.024	95	.028	100			.009	33		
19	.016	81	.027	95	.032	89	.028	75						
20									.021	95				
21	.014	74	.012	61							.023	95		
22			.029	100										
23	.023	95	.013	56							.026	91		
24	.018	89	.011	80					.016	100	.012	61		
25			.009	44	.021	86	.024	90	.023	90	.025	100		
27											.024	71		
28			.035	95	.038	95	.035	87						
29			.027	68					.035	87	.033	91		
30			.029	74	.025	65	.014	44	.018	70	.021	86		
31	.016	100			.014	67	.006	24						

APRIL, 1883.

TABLE CI.—*Absolute and relative humidity of the air at Fort Conger, April, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	------	------	------	------	------	------	------	------	.009	65	------	------	------	------
2	------	------	------	------	.011	59	------	------	.009	80	------	------	------	------
3	------	------	.008	89	.011	76	------	------	.009	100	.009	80	------	------
4	.009	72	.009	60	.019	93	.016	86	.016	86	.020	90	.0148	81.2
5	.016	65	.022	74	------	------	.026	78	.027	100	------	------	------	------
6	.004	18	.003	9	.010	43	.010	43	.017	92	------	------	------	------
7	.016	81	.012	68	.025	90	.020	70	.025	91	.028	95	.0210	82.5
8	.027	91	.015	56	.018	67	.011	37	.018	84	------	------	------	------
9	------	------	.009	68	.012	58	.008	41	.016	100	.005	46	------	------
10	.007	69	------	------	------	------	.005	21	.010	80	.007	69	------	------
11	.007	84	.005	21	------	------	.016	71	.011	64	------	------	------	------
12	.005	24	.011	61	.004	14	.006	24	.018	100	.004	21	.0080	40.7
13	.004	19	.009	55	------	------	.008	40	------	------	.015	100	------	------
14	.006	40	.012	84	------	------	.006	33	.008	50	------	------	------	------
15	.011	90	------	------	------	------	.009	44	.015	85	.014	100	------	------
16	.011	69	------	------	.003	9	.005	28	.015	78	.017	100	------	------
17	------	------	------	------	.007	30	------	------	.009	48	------	------	------	------
18	.011	69	.011	59	.006	27	.023	82	.014	61	.022	86	.0145	64.0
19	.023	82	.026	86	.028	79	.009	27	.024	86	------	------	------	------
20	.017	100	------	------	.009	41	.016	65	.024	78	------	------	------	------
21	------	------	------	------	.023	100	.021	77	.028	100	.009	41	------	------
22	.023	86	.022	74	.013	36	.018	55	------	------	.013	58	------	------
23	.021	86	.013	54	.027	71	.022	64	.028	86	.019	80	.0217	73.5
24	------	------	.020	71	------	------	.025	59	.031	87	------	------	------	------
25	------	------	.020	62	.020	52	.029	71	.033	87	.022	100	------	------
26	.022	95	.007	31	------	------	.024	68	.026	78	.030	100	------	------
27	------	------	------	------	.040	91	.044	82	.037	100	------	------	------	------
28	.039	100	.032	79	.036	75	------	------	------	------	------	------	------	------
29	.039	100	.045	95	.043	68	.040	79	------	------	------	------	------	------
30	.024	95	.025	65	.035	75	.027	55	.035	82	.034	100	.0300	78.7

MAY, 1883.

TABLE CII.—*Absolute and relative humidity of the air at Fort Conger, May, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.023	82			.024	53			.039	98	.035	87		
2			.025	63	.028	55	.040	79	.034	87	.030	91		
3	.024	78	.029	73	.013	32	.029	72	.027	76	.023	92	.0242	70.5
4	.022	82	.014	41	.016	36	.032	72	.032	79	.027	95	.0238	67.5
5	.024	82	.018	47			.040	74			.032	91		
6			.027	66	.043	80	.045	78	.056	93	.027	55		
7	.039	91	.057	89	.063	80	.082	89						
8			.052	95			.061	76			.062	96		
9			.051	82	.056	98			.082	89				
10	.061	100	.065	90	.068	82	.063	98	.078	94				
11	.069	90	.077	72	.105	95	.115	89						
12			.080	93	.082	81	.091	82	.087	92	.084	98		
13			.137	92	.141	94					.139	100		
14					.130	99	.126	97	.085	87	.074	96		
15	.080	100	.074	89	.081	89	.081	93			.082			
16	.082	98	.086	93	.099	90	.091	84						
17	.062	90	.066	92	.056	66	.073	84	.081	95	.058	100	.0660	87.8
18	.059	96	.060	70	.076	77	.085	83	.085	91	.070	95	.0725	85.3
19	.069	96	.068	82	.079	78	.070	58	.083	79	.084	84	.0755	79.5
20			.092	80	.133	99	.134	94	.128	96				
21	.104	100	.142	100	.168	98			.149	99	.134	100		
22					.136	84	.148	90	.142	96		92		
23					.132	92	.137	95	.132	100				
24									.135	99	.134	100		
25	.118	89	.126	95	.134	93	.121	94	.118	96	.102	96	.1198	93.8
26	.102	94	.114	90	.116	93	.116	93	.106	95	.099	98	.1088	93.8
27	.106	94	.113	96	.127	100	.124	93	.128	99				
28	.118	99			.122	100	.139	93	.128	100	.099	100		
29	.078	86	.096	95	.108	92	.115	88	.115	99				
30	.114	92	.124	94	.135	95	.140	94						
31	.116	97	.163	97	.140	94	.139	99			.132	99		

JUNE, 1883.

TABLE CIII.—*Absolute and relative humidity of the air at Fort Conger, June, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = + 81^{\circ} 44'$ $\lambda = - 64^{\circ} 45' = -4^{h} 19^{m}$

Date.	3 a.m.		7 a.m.		11 a.m.		3 p.m.		7 p.m.		11 p.m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	------	------	------	------	.119	80	.124	82	.140	99	.133	99	------	------
2	.119	94	.124	93	.138	93	.140	93	.177	98	.175	98	.1455	94.8
3	.164	95	.177	90	.194	84	------	------	.220	99	.157	89	------	------
4	.124	82	.136	80	.148	82	.159	70	.130	70	.119	73	.1360	76.2
5	.132	88	.136	83	.134	77	.136	85	.132	83	.130	87	.1333	83.8
6	.134	88	.140	87	.146	78	.172	87	.151	86	.135	84	.1463	85.0
7	.130	83	.132	85	.134	85	.132	83	.131	83	.124	86	.1305	84.2
8	.130	87	.133	76	.135	69	.159	75	.136	76	.128	78	.1368	76.8
9	.115	75	.134	80	.143	79	.142	75	.130	73	.116	79	.1283	76.8
10	.112	80	.126	84	.136	85	.146	87	.132	84	.134	83	.1310	83.8
11	.143	88	.135	76	.150	86	.145	86	.142	84	.136	85	.1418	84.2
12	.139	89	.144	91	.138	85	.146	87	.142	75	.126	84	.1392	85.2
13	.143	85	.148	72	.161	84	.162	82	.136	68	.126	67	.1460	76.3
14	.124	65	.122	63	.143	68	.127	58	.152	75	.128	65	.1327	65.7
15	.137	80	.145	82	.136	78	.140	79	.147	75	.141	86	.1410	80.0
16	.117	79	.134	76	.147	75	.152	69	.155	80	.143	82	.1413	76.8
17	------	------	.149	83	.151	65	.162	68	.155	63	.155	87	------	------
18	.136	76	.162	88	.132	64	.128	60	.129	65	.134	79	.1368	72.0
19	.132	76	.131	76	.134	74	.136	76	.137	76	.149	83	.1365	76.8
20	.151	83	.156	88	.149	75	.177	77	.162	79	.162	82	.1595	80.7
21	.164	84	.154	80	.177	87	.163	76	.160	78	.150	78	.1613	80.5
22	.142	81	.140	78	.152	75	.157	68	.154	82	.154	84	.1498	78.0
23	.162	87	.168	87	.177	89	.182	83	.173	77	.145	70	.1678	82.2
24	.137	65	.134	65	.165	72	.149	70	.148	84	.140	80	.1455	72.7
25	.146	83	.149	79	.177	78	.148	76	.143	79	.137	75	.1500	78.3
26	.150	77	.156	78	.168	83	.170	84	.163	83	.161	84	.1613	81.5
27	.167	88	.172	87	.171	84	.175	77	.159	81	.153	83	.1662	83.3
28	.164	85	.162	82	.154	77	.154	71	.143	71	.156	86	.1555	78.7
29	.140	76	.134	62	.152	66	.135	63	.152	82	.151	89	.1440	73.0
30	.143	87	.155	87	.154	79	.160	76	.147	72	.154	84	.1522	80.8
Means	------	------	------	------	.1505	78.5	------	------	.1489	79.3	1.417	82.3	.1466	80.4

JULY, 1883.

TABLE CIV.—*Absolute and relative humidity of the air at Fort Conger, July, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Hygrometer above surface of ground, 5 feet [1.5 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	3 a. m.		7 a. m.		11 a. m.		3 p. m.		7 p. m.		11 p. m.		Daily means.	
	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.	Absolute.	Relative.
1	.152	89	.146	84	.145	80	.149	83	.152	78	.154	80	.1497	82.3
2	.161	84	.177	83	.181	76	.186	79	.176	73	.154	79	.1725	79.0
3	.156	82	.158	80	.168	74	.160	76	.157	81	.151	77	.1583	78.3
4	.142	85	.158	86	.152	78	.177	84	.171	76	.155	88	.1592	82.8
5	.163	94	.153	84	.164	81	.168	74	.160	74	.146	85	.1590	82.0
6	.147	90	.146	84	.136	80	.145	84	.145	78	.143	82	.1437	83.0
7	.152	85	.152	79	.149	73	.180	72	.194	69	.188	66	.1692	74.0
8	.180	70	.190	80	.181	75	.173	69	.183	69	.170	83	.1795	74.3
9	.168	85	.175	83	.177	76	.181	75	.170	74	.149	82	.1700	79.2
10	.151	89	.159	78	.150	78	.154	76	.163	83	.147	88	.1540	83.7
11	.144	86	.152	84	.173	78	.183	76	.167	82	.139	73	.1597	79.8
12	.156	84	.164	79	.183	75	.206	58	.187	56	.189	78	.1808	71.7
13	.176	77	.177	72	.188	79	.179	79	.168	83	.166	84	.1757	79.0
14	.162	82	.168	84	.164	82	.163	82	.160	83	.157	82	.1623	82.5
15	.156	81	.170	75	.180	82	.205	79	.187	72	.190	76	.1813	77.5
16	.187	71	.185	74	.173	72	.189	65	.190	66	.190	65	.1857	68.8
17	.185	64	.188	66	.200	60	.188	79	.176	86	.177	80	.1857	72.5
18	.194	82	.180	75	.183	74	.199	72	.187	72	.177	69	.1867	74.0
19	.194	76	.210	84	.183	76	.180	75	.165	69	.185	82	.1862	77.0
20	.178	76	.181	78	.213	58	.195	58	.195	83	.168	83	.1883	72.7
21	.156	79	.163	81	.175	75	.183	80	.177	83	.160	81	.1690	79.8
22	.169	83	.185	74	.186	65	.184	60	.175	67	.175	78	.1790	71.2
23	.175	82	.174	87	.179	88	.190	88	.181	84	.173	87	.1787	86.0
24	.172	87	.176	82	.189	76	.183	84	.177	87	.173	87	.1783	83.8
25	.170	88	.174	92	.165	84	.174	87	.165	93	.164	95	.1687	89.8
26	.158	90	.168	89	.152	80	.166	83	.156	82	.163	82	.1605	84.3
27	.161	83	.162	78	.172	87	.178	86	.176	82	.162	82	.1685	83.0
28	.157	86	.154	82	.156	77	.173	76	.165	82	.149	82	.1590	80.8
29	.156	89	.153	79	.161	82	.175	81	.175	80	.170	68	.1650	79.8
30	.173	66	.190	72	.190	74	.221	80	.178	70	.179	72	.1885	72.3
31	.185	69	.188	66	.198	62	.193	65	.204	62	.189	73	.1928	66.2
Means	.1657	81.7	.1702	80.1	.1731	76.0	.1800	76.3	.1736	76.7	.1662	79.7	.1715	78.4

AUGUST, 1881.

TABLE CV.—*Direction and velocity of the wind, August, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	....	....	....	....	....	....	....	....	....	....	....	....	....	....
2	....	....	....	....	....	....	....	....	....	....	....	....	....	....
3	....	....	....	....	....	....	....	....	....	....	....	....	....	....
4	....	....	....	....	....	....	....	....	....	....	....	....	....	....
5	....	....	....	....	....	....	....	....	....	....	....	....	....	....
6	....	....	....	....	....	....	....	....	....	....	....	....	....	....
7	....	....	....	....	....	....	....	....	....	....	....	....	....	....
8	....	....	....	....	....	....	....	....	....	....	....	....	....	....
9	....	....	....	....	....	....	....	....	....	....	....	....	....	....
10	....	....	....	....	....	....	....	....	....	....	....	....	....	....
11	....	....	....	....	....	....	....	....	....	....	....	....	....	....
12	....	....	....	....	....	....	....	....	....	....	....	....	....	....
13	....	....	....	....	....	....	....	....	....	....	....	....	....	....
14	....	....	....	....	....	....	....	....	....	....	....	....	....	....
15	n. 2	0 0	0 0	n. 4	0 0	0 0	sw. 2	sw. 3	sw. 3	sw. 2	sw. 3	n. 3	n. 2	n. 2
16	w. 2	w. 1	n. 2	n. 1	sw. 2	sw. 2	n. 2	w. 3	(*a*)	(*a*)	se. 1	0 0	0 0	se. 1
17	se. 2	se. 1	se. 3	se. 1	se. 2	sw. 1	sw. 2	sw. 2	w. 2	w. 2	w. 1	w. 1	w. 1	sw. 1
18	s. 2	s. 4	0 0	s. 1	0 0	se. 1	se. 2	0 0	se. 1	e. 2	se. 2	se. 2	se. 2	se. 2
19	0 0	s. 5	sw. 7	s. 6	s. 4	sw. 3	sw. 7	sw. 3	sw. 2	sw. 1	sw. 2	sw. 2	sw. 2	sw. 5
20	sw. 2	sw. 2	sw. 1	nw. 1	nw. 1	nw. 1	sw. 1	n. 1	n. 1	0 0	sw. 2	sw. 2	sw. 2	sw. 1
21	ne. 2	0 0	sw. 1	sw. 1	sw. 1	0 0	0 0	0 0	0 0	0 0	sw. 1	sw. 1	sw. 1	0 0
22	0 0	0 0	0 0	nw. 1	nw. 1	nw. 1	sw. 4	se. 1	nw. 4	nw. 1	w. 2	w. 3	s. 5	s. 6
23	0 0	0 0	0 0	0 0	0 0	w. 2	(*a*)	sw. 2	sw. 4	sw. 2	s. 2	s. 1	nw. 2	0 0
24	sw. 4	sw. 5	s. 1	sw. 4	sw. 5	sw. 4	sw. 2	sw. 2	sw. 3	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2
25	0 0	0 0	sw. 3	0 0	se. 3	0 0	sw. 7	w. 1	w. 2	w. 3	nw. 3	nw. 1	se. 2	nw. 2
26	e. 4	e. 5	sw. 4	ne. 5	s. 3	nw. 3	sw. 2	sw. 1	sw. 1	sw. 2	sw. 2	sw. 1	sw. 1	sw. 1
27	se. 10	se. 1	sw. 5	ne. 5	ne. 14	ese. 4	ne. 5	ne. 5	ne. 12	ne. 12	ne. 12	ne. 9	0 0	se. 12
28	se. 16	se. 6	sw. 4	0 0	0 0	sw. 2	0 0	nw. 5	nw. 2	0 0	0 0	sw. 2	sw. 1	0 0
29	e. 1	e. 1	se. 7	sw. 2	0 0	se. 1	nw. 4	nw. 6	se. 2	sw. 1	sw. 10	sw. 8	sw. 1	sw. 1
30	ne. 4	nne. 10	nne. 10	nne. 4	ne. 4	n. 3	se. 5	se. 1	se. 2	se. 3	se. 1	se. 2	e. 5	e. 9
31	ne. 10	**ne. 16**	ne. 5	ne. 8	ne. 6	ne. 4	se. 6	se. 5	se. 4	e. 3	se. 5	e. 4	e. 3	ne. 6
Means	3.6	3.4	3.1	2.6	2.7	1.9	3.2	2.4	2.8	2.2	3.0	2.6	2.2	3.0
Means in meters per second	1.6	1.5	1.4	1.2	1.2	0.8	1.4	1.1	1.3	1.0	1.3	1.2	1.0	1.3

Above velocities were determined from dial readings with 5 minutes intervals. Direction true. *a* Observation missed.

AUGUST, 1881.

TABLE CV.—*Direction and velocity of the wind, August, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
....	....	....	....	....	....	....	....	....	....	....	....	1
....	....	....	....	....	....	....	....	....	....	....	....	2
....	....	....	....	....	....	....	....	....	....	....	....	3
....	....	....	....	....	....	....	....	....	....	....	....	4
....	....	....	....	....	....	....	....	....	....	....	....	5
....	....	....	....	....	....	....	....	....	....	....	....	6
....	....	....	....	....	....	....	....	....	....	....	....	7
....	....	....	....	....	....	....	....	....	....	....	....	8
....	....	....	....	....	....	....	....	....	....	....	....	9
....	....	....	....	....	....	....	....	....	....	....	....	10
....	....	....	....	....	....	....	....	....	....	....	....	11
....	....	....	....	....	....	....	....	....	....	....	....	12
....	....	....	....	....	....	....	....	....	....	....	....	13
....	....	....	....	....	....	....	....	....	....	....	....	14
sw. 4	sw. 4	sw. 1	se. 2	se. 4	ne. 1	e. 1	e. 2	o 0	w. 4	2.0	0.9	15
o 0	o 0	o 0	se. 2	o 0	se. 2	sw. 2	o 0	se. 11	se. 1	1.6	0.7	16
sw. 1	s. 1	s. 1	o 0	o 0	o 0	o 0	o 0	o 0	s. 1	1.1	0.5	17
s. 2	se. 2	se. 3	se. 4	se. 2	se. 2	e. 2	sw. 3	sw. 6	ne. 4	2.1	0.9	18
sw. 5	sw. 3	sw. 3	sw. 2	sw. 2	sw. 2	sw. 1	se. 4	sw. 2	sw. 1	3.1	1.4	19
sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	o 0	e. 2	e. 2	sw. 2	nw. 3	1.5	0.7	20
sw. 1	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.4	0.2	21
s. 3	s. 2	s. 3	s. 1	s. 1	o 0	s. 1	sw. 2	o 0	o 0	1.8	0.8	22
w. 2	s. 2	w. 1	w. 4	w. 5	s. 1	s. 2	s. 3	s. 4	sw. 6	2.0	0.9	23
sw. 2	sw. 2	sw. 5	sw. 4	sw. 4	sw. 3	sw. 3	sw. 1	sw. 2	sw. 1	2.8	1.3	24
nw. 1	nw. 2	nw. 1	o 0	sw. 10	w. 2	sw. 2	sw. 2	sw. 4	e. 4	2.5	1.1	25
sw. 8	sw. 6	sw. 3	sw. 2	o 0	o 0	o 0	se. 1	e. 7	se. 6	2.8	1.3	26
se. 12	se. 12	se. 12	se. 12	se. 13	sw. 2	se. 10	se. 12	s. 16	se. 14	9.2	4.1	27
o 0	sw. 1	sw. 1	s. 1	se. 4	se. 5	ne. 2	e. 4	e. 4	e. 1	2.5	1.1	28
se. 0	nw. 7	nw. 6	ne. 7	s. 3	e. 5	ne. 4	n. 3	ne. 9	ne. 3	4.0	1.8	29
se. 1	se. 2	w. 2	n. 3	o 0	nw. 1	o 0	o 0	se. 5	ne. 7	3.5	1.6	30
e. 6	o 0	ne. 4	nw. 3	w. 1	w. 6	o 0	n. 8	e. 12	e. 6	5.5	2.5	31
3.1	2.8	2.8	2.9	3.0	1.9	1.9	2.8	4.9	3.6	2.85	....	
1.4	1.3	1.3	1.3	1.3	0.8	0.8	1.3	2 2	1.6	1.3	1.3	

SEPTEMBER, 1881.

TABLE CVI.—*Direction and velocity of the wind, September, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	ne. 2	0 0	se. 5	s. 1	s. 2	nw. 4	sse. 1	0 0	0 0	0 0	n. 2	n. 1	n. 2	n. 1
2	ne. 7	ne. 6	ne. 4	ne. 6	ne. 3	ne. 3	ne. 6	ne. 2	ne. 1	ne. 2	s. 5	s. 2	s. 5	sw. 6
3	ne. 4	ne. 2	ne. 3	ne. 4	ne. 4	0 0	ne. 2	ne. 2	ne. 4	0 0	ne. 1	ne. 1	ne. 1	ne. 2
4	n. 13	n. 12	sw. 2	n. 5	ne. 7	n. 4	n. 7	n. 5	0 2	n. 1	0 3	0 0	n. 3	0 0
5	ne. 7	ne. 7	e. 3	e. 3	e. 4	e. 6	e. 4	e. 3	ne. 1	ne. 4	nw. 3	n. 3	n. 4	nw. 5
6	nw. 4	n. 5	n. 2	n. 4	n. 2	n. 2	n. 2	n. 2	n. 5	n. 5	nw. 4	nw. 3	nw. 2	nw. 2
7	ne. 6	e. 6	e. 6	e. 6	n. 9	n. 7	n. 5	nw. 6	n. 4	n. 10	0 3	0 2	n. 3	ne. 3
8	s. 4	s. 3	s. 4	s. 3	s. 3	s. 2	0 2	0 1	s. 1	s. 3	se. 2	se. 4	se. 2	s. 2
9	sw. 1	sw. 1	sw. 1	sw. 3	ne. 4	ne. 5	ne. 0	ne. 1	ne. 2	0 1	ne. 2	ne. 4	0 5	nw. 2
10	nw. 1	n. 3	nw. 3	n. 4	n. 20	n. 28	ne. 24	ne. 17	**n. 30**	**n. 30**	n. 19	n. 25	sw. 7	e. 13
11	ne. 3	ne. 3	ne. 4	e. 8	e. 10	e. 8	e. 2	ne. 4	ne. 2	ne. 2	ne. 2	e. 3	0 4	e. 2
12	sw. 17	sw. 21	w. 18	w. 16	w. 15	sw. 16	sw. 15	sw. 12	sw. 12	sw. 12	sw. 16	sw. 19	sw. 9	sw. 8
13	n. 15	n. 14	n. 15	n. 13	n. 13	n. 8	n. 5	n. 7	n. 5	n. 5	ne. 1	ne. 3	n. 2	n. 2
14	ne. 2	ne. 3	0 2	ne. 2	0 0	0 1	0 1	0 2	0 2	0 1	0 2	ne. 1	0 1	ne. 1
15	ne. 2	ne. 6	ne. 6	e. 4	e. 7	e. 6	ne. 6	ne. 3	ne. 2	0 1	0 1	0 2	0 3	n. 3
16	0 1	0 1	e. 2	e. 1	e. 1	0 2	0 0	0 1	e. 1	0 2	0 0	0 1	e. 2	e. 1
17	0 4	e. 1	e. 3	e. 4	e. 4	e. 3	e. 1	e. 2	e. 4	e. 2	e. 5	e. 3	0 4	se. 4
18	0 1	e. 0	0 1	0 1	0 0	e. 0	0 1	0 0	0 1	0 0	e. 1	0 0	0 1	0 0
19	0 1	0 2	ne. 1	0 4	ne. 3	ne. 4	e. 6	ne. 6	ne. 6	e. 5	ne. 5	ne. 5	ne. 4	e. 7
20	0 0	0 1	0 0	0 1	0 4	e. 4	e. 8	0 2	0 2	0 2	e. 2	0 1	e. 3	e. 3
21	e. 1	0 1	0 2	0 1	e. 3	0 2	e. 2	e. 2	e. 1	ese. 1	ese. 2	ese. 0	ese. 2	ese. 2
22	e. 2	0 1	ne. 1	ne. 1	ne. 3	ne. 1	0 1	e. 2	e. 1	se. 1	se. 2	se. 2	se. 5	e. 2
23	e. 4	e. 3	e. 1	0 1	0 1	e. 2	0 1	0 0	0 1	e. 7	ne. 5	0 3	0 0	0 0
24	e. 5	e. 2	e. 5	e. 5	e. 6	e. 8	e. 5	e. 6	e. 2	e. 1	e. 4	e. 3	se. 2	se. 1
25	e. 3	se. 5	e. 4	n. 7	n. 2	e. 6	e. 4	se. 3	0 1	e. 4	e. 6	e. 3	ne. 3	e. 4
26	e. 5	e. 7	e. 7	e. 7	e. 8	e. 8	e. 4	e. 1	0 1	0 2	e. 2	0 0	se. 1	0 3
27	0 1	0 0	0 0	0 1	0 0	0 1	0 0	0 0	0 1	0 0	0 1	0 1	0 0	0 1
28	0 3	0 2	ne. 4	n. 9	n. 11	n. 12	n. 12	n. 12	n. 13	n. 14	n. 14	ne. 14	n. 14	ne. 7
29	n. 3	0 2	0 2	n. 3	n. 11	n. 9	n. 8	n. 5	n. 6	ne. 9	e. 3	e. 5	0 1	e. 2
30	e. 2	e. 2	e. 1	e. 1	0 1	e. 1	ne. 1	n. 1	n. 2	ne. 2	e. 1	e. 2	e. 1	0 3
Means	4.1	4.1	3.7	4.3	**5.4**	**5.4**	4.5	3.7	3.9	4.3	4.0	3.9	3.2	3.1
Means in meters per second	1.8	1.8	1.7	1.9	**2.4**	**2.4**	2.0	1.7	1.7	1.9	1.8	1.7	1.4	1.4

All directions are true. Recorded velocities are miles blown since the preceding hour.
Velocities without direction show that the wind has blown during the hour, but was calm at time of observation.

SEPTEMBER, 1881.

TABLE CVI.—*Direction and velocity of the wind, September,* 1881.

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
e. 5	n. 3	e. 8	ene. 10	ne. 5	ne. 2	o 0	ne. 5	ne. 6	ne. 4	2.9	1.3	1
s. 6	s. 1	s. 1	s. 2	s. 4	se. 3	se. 3	e. 2	ne. 2	ne. 3	3.5	1.6	2
o 0	ne. 8	ne. 6	ne. 8	n. 14	n. 12	n. 12	n. 12	n. 13	n. 12	5.3	2.4	3
o 2	o 2	o 1	o 1	n. 1	n. 4	n. 3	ne. 3	ne. 6	ne. 3	3.8	1.7	4
n. 4	n. 6	n. 3	n. 4	ne. 2	n. 2	n. 3	o 2	o 2	o 2	3.6	1.6	5
o 0	nw. 0	o 1	nw. 1	e. 3	o 2	n. 3	ne. 4	n. 5	ne. 5	2.8	1.3	6
ne. 2	o 1	ne. 2	ne. 4	e. 6	s. 2	se. 3	se. 3	se. 3	se. 5	4.3	1.9	7
s. 2	s. 4	se. 6	se. 2	se. 2	se. 2	o 0	o 1	o 1	o 2	2.4	1.1	8
nw. 4	o 2	nw. 2	o 7	nw. 2	nw. 5	o 4	nw. 2	nw. 1	nw. 4	2.7	1.2	9
e. 12	e. 15	se. 17	e. 8	se. 1	e. 2	o 4	e. 1	ne. 3	ne. 5	**12.2**	**5.5**	10
e. 2	se. 4	sw. 4	sw. 11	sw. 14	sw. 10	sw. 10	sw. 7	sw. 9	sw. 14	5.9	2.6	11
o 4	sw. 4	sw. 6	sw. 4	w. 4	w. 8	nw. 9	nw. 7	ne. 9	n. 8	11.2	5.0	12
n. 2	n. 1	n. 2	n. 2	n. 2	n. 2	ne. 1	ne. 3	ne. 1	ne. 1	5.2	2.3	13
o 1	ne. 2	ne. 1	ne. 2	ne. 2	ne. 2	ne. 6	ne. 4	ne. 6	o 1	2.0	0.9	14
n. 2	n. 3	n. 2	n. 2	n. 3	n. 1	n. 2	n. 2	e. 1	o 2	3.0	1.3	15
e. 3	e. 6	e. 2	e. 2	e. 4	e. 4	o 1	o 2	e. 2	ne. 5	2.0	0.9	16
se. 3	se. 2	se. 1	se. 1	o 1	o 1	s. 1	o 1	o 1	s. 1	2.4	1.1	17
o 1	e. 1	e. 1	o 1	e. 1	o 1	o 2	o 1	se. 1	o 1	0.8	0.4	18
ne. 7	n. 5	n. 3	ne. 2	ne. 1	o 1	o 1	o 1	o 0	o 1	3.4	1.5	19
o 3	o 3	e. 3	e. 1	ne. 1	o 2	o 1	o 1	e. 1	o 2	2.1	0.9	20
ese. 2	ese. 1	e. 3	ne. 5	e. 2	e. 4	e. 2	e. 2	e. 1	e. 1	1.9	0.8	21
e. 1	e. 9	e. 9	nw. 12	ne. 6	o 2	ne. 3	e. 5	e. 5	e. 2	3.3	1.5	22
o 0	e. 1	e. 4	e. 2	se. 4	se. 5	e. 4	e. 4	e. 4	e. 9	2.8	1.3	23
se. 4	se. 4	e. 4	e. 9	e. 6	e. 6	e. 6	se. 5	e. 5	e. 3	4.5	2.0	24
e. 6	e. 8	e. 5	ne. 5	ne. 7	ne. 9	e. 7	e. 5	ne. 8	e. 7	5.1	2.3	25
o 1	o 1	o 1	o 1	ne. 2	o 1	o 1	ne. 1	ne. 1	o 1	2.8	1.3	26
o 1	o 1	o 1	ne. 2	ne. 2	ne. 0	o 1	o 2	o 2	ne. 2	0.9	0.4	27
n. 8	o 1	o 1	n. 2	o 0	o 1	o 1	o 0	o 1	sw. 1	6.5	2.9	28
o 1	o 3	e. 6	e. 3	e. 3	e. 5	e. 7	e. 4	e. 7	e. 1	4.5	2.0	29
e. 2	o 2	e. 1	e. 2	e. 1	o 1	o 2	o 1	o 1	o 0	1.4	0.6	30
3.0	3.5	3.6	3.9	3.5	3.4	3.4	3.1	3.6	3.6	3.84	--------	
1.3	1.6	1.6	1.7	1.6	1.5	1.5	1.4	1.6	1.6	1.7	1.7	

OCTOBER, 1881.

TABLE CVII.—*Direction and velocity of the wind, October, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	e. 1	e. 1	e. 4	e. 5	se. 6	se. 2	se. 2	se. 2	se. 1	se. 2	se. 2	se. 2	0 1	0 1
2	se. 3	se. 2	se. 1	se. 1	se. 2	se. 2	ne. 1	se. 1	0 2	0 1	se. 2	se. 2	e. 1	0 1
3	n. 11	nw. 16	n. 12	nw. 4	e. 4	e. 6	e. 2	e. 4	e. 6	e. 1	e. 7	e. 5	e. 4	e. 3
4	0 1	e. 2	e. 2	e. 3	0 2	e. 1	e. 2	0 2	e. 1	e. 1	e. 5	0 3	n. 1	ne. 2
5	0 0	se. 0	se. 1	0 1	0 0	0 0	0 1	0 1	se. 0	se. 0	0 1	0 0	ne. 1	0 0
6	0 1	0 1	e. 4	e. 4	0 2	0 1	se. 3	0 1	e. 2	e. 3	e. 1	e. 3	0 2	se. 1
7	0 0	0 1	0 1	0 1	se. 2	se. 1	se. 2	0 1	0 1	0 1	0 1	se. 0	0 1	0 1
8	ne. 17	ne. 15	ne. 13	ne. 7	0 5	0 2	0 1	0 1	sw. 2	0 1	sw. 1	sw. 4	0 1	0 1
9	e. 5	e. 5	ne. 7	ne. 6	ne. 7	ne. 7	ne. 3	e. 2	e. 1	0 1	0 0	0 1	0 0	0 1
10	0 2	e. 3	0 1	0 1	0 3	0 1	0 1	e. 1	0 1	0 1	0 2	e. 2	0 1	0 1
11	0 1	0 0	0 3	0 2	0 0	0 1	0 1	0 0	0 1	e. 1	e. 6	ne. 7	ne. 2	0 0
12	ne. 2	ne. 1	0 1	ne. 0	0 1	ne. 0	se. 1	se. 1	ne. 1	0 1	ne. 1	ne. 2	ne. 2	ne. 1
13	0 1	0 1	ne. 1	0 1	0 1	0 1	0 2	0 1	0 1	0 1	0 1	0 1	0 1	0 1
14	ne. 2	ne. 2	0 2	0 1	0 1	0 2	0 1	e. 2	e. 2	0 1	0 1	0 1	0 2	0 1
15	0 0	0 1	0 0	e. 2	0 1	0 1	0 2	0 2	e. 2	e. 2	e. 3	e. 1	e. 2[a]	e. 2[a]
16	0 2	e. 1	e. 3	e. 2	e. 3	e. 3	e. 5	e. 4	e. 5	e. 7	e. 4	e. 8	ne. 2	0 1
17	0 2	0 1	0 0	0 1	se. 1	0 1	0 1	se. 1	se. 2	0 1	se. 0	se. 2	se. 1	0 1
18	se. 1	0 1	se. 1	se. 2	0 1	0 1	se. 1	0 1	0 0	0 1	se. 1	se. 2	0 1	0 1
19	se. 1	0 1	0 1	se. 1	0 0	se. 2	0 2	0 1	se. 1	nw. 1	ne. 1	0 1	ne. 0	0 1
20	0 0	0 1	0 1	0 1	se. 1	se. 1	0 1	0 2	se. 2	se. 2	se. 2	se. 2	se. 2	0 2
21	0 1	ne. 2	0 1	0 1	ne. 2	0 3	ne. 1	se. 3	ne. 4	ne. 7	e. 4	e. 4	e. 3	e. 2
22	e. 4	e. 5	nw. 5	ne. 4	se. 4	e. 3	e. 5	e. 3	e. 2	ne. 1	ne. 1	e. 3	0 3	e. 2
23	0 1	0 1	se. 1	0 1	0 2	0 1	0 1	0 1	se. 2	se. 1	se. 2	se. 2	se. 2	0 1
24	ne. 2	ne. 2	0 1	0 0	e. 3	0 2	ne. 1	ne. 2	0 3	ne. 1	se. 2	0 1	ne. 5	0 3
25	0 1	se. 2	0 2	w. 1	0 2	0 0	0 1	0 2	nw. 1	0 3	0 1	ne. 2	0 1	ne. 2
26	0 2	0 1	e. 2	s. 3	n. 2	nw. 2	w. 2	se. 2	0 1	0 1	0 1	0 1	0 2	0 2
27	0 1	0 1	0 1	0 1	0 1	0 1	0 1	0 1	e. 0	0 1	ne. 1	se. 1	0 1	0 1
28	0 1	0 1	0 2	0 0	0 2	0 1	e. 1	0 2	0 0	ne. 2	0 0	0 1	0 1	0 0
29	0 1	0 1	0 0	0 1	0 1	0 1	0 0	0 0	0 1	0 1	0 1	0 0	se. 1	0 0
30	0 1	n. 5	ne. 2	ne. 2	ne. 2	se. 0	0 1	0 2	0 0	0 1	0 1	0 2	se. 2	0 2
31	0 0	0 1	0 1	0 1	0 1	0 2	0 2	0 0	0 1	e. 1	e. 2	0 1	e. 1	0 1
Means	2.2	2.5	2.5	2.0	2.1	1.7	1.6	1.6	1.6	1.8	1.9	2.2	1.6	1.3
Means in meters per second	1.0	1.1	1.1	0.9	0.9	0.8	0.7	0.7	0.7	0.8	0.8	1.0	0.7	0.6

[a] From dial reading.

OCTOBER, 1881.

TABLE CVII.—*Direction and velocity of the wind, October, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters.]

$\phi = +81° 44'$ $\gamma = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
ne. 1	o 1	o 0	o 1	o 1	o 1	o 1	e. 3	e. 2	e. 1	1.8	0.8	1
o 1	o 1	o 4	se. 2	o 1	se. 2	se. 4	se. 4	se. 3	se. 3	2.0	0.9	2
e. 1	o 2	ne. 2	ne. 4	ne. 2	ne. 1	e. 1	e. 1	o 1	o 1	4.4	2.0	3
e. 1	o 1	e. 3	e. 2	o 1	o 1	o 1	e. 1	o 1	o 1	1.7	0.8	4
o 1	o 1	se. 2	o 0	o 1	o 1	o 0	o 1	o 0	o 0	0.5	0.2	5
se. 2	o 0	se. 1	ne. 2	o 1	o 0	ne. 1	o 1	se. 1	o 1	1.6	0.7	6
ne. 3	ne. 11	ne. 13	ne. 8	ne. 11	ne. 8	ne. 4	n. 16	ne. 9	ne. 15	**4.7**	**2.1**	7
e. 3	sw. 2	sw. 1	sw. 5	ne. 3	ne. 3	s. 5	se. 2	e. 6	e. 6	4.5	2.0	8
o 1	o 1	e. 1	o 0	o 1	e. 2	e. 2	o 1	e. 3	e. 3	2.5	1.1	9
e. 2	e. 8	e. 6	e. 5	e. 2	e. 1	o 1	ne. 1	o 1	o 1	2.0	0.9	10
ne. 1	ne. 1	o 1	o 1	o 0	o 1	ne. 2	o 1	o 1	o 1	1.5	0.7	11
ne. 2	o 5	e. 1	o 2	o 1	o 1	o 1	o 0	o 2	o 1	1.3	0.6	12
e. 2	e. 1	o 1	e. 2	o 1	o 1	ne. 2	ne. 2	e. 2	o 4	1.4	0.6	13
o 2	o 0	o 2	o 0	o 1	o 1	o 0	o 1	o 0	o 1	1.2	0.5	14
e. 3[a]	e. 2	e. 2	e. 2	e. 7	e. 6	e. 5	o 3	e. 3	e. 4	2.4	1.1	15
e. 2	e. 1	o 1	o 1	o 1	o 2	e. 1	e. 3	se. 1	o 1	2.7	1.2	16
se. 1	se. 2	se. 2	o 1	o 0	se. 2	o 1	o 1	o 1	o 1	1.1	0.5	17
o 1	o 1	o 0	o 2	o 1	o 2	o 1	o 1	o 0	o 1	1.0	0.4	18
se. 1	se. 1	se. 1	o 1	o 1	o 2	o 1	o 1	o 0	o 2	1.0	0.4	19
se. 2	se. 3	se. 2	se. 3	nw. 3	ne. 3	ne. 2	ne. 1	ne. 2	ne. 2	1.8	0.8	20
o 4	e. 1	e. 2	e. 8	o 2	e. 3	e. 2	se. 3	se. [illegible]	se. 7	3.0	1.3	21
e. 1	e. 3	e. 4	e. 2	e. 4	e. 3	o 2	e. 1	e. 4	e. 1	2.9	1.3	22
e. 4	o 1	se. 3	o 1	o 2	o 1	o 1	ne. 2	ne. 2	o 1	1.5	0.7	23
w. 1	ne. 2	ne. 2	sw. 1	w. 3	o 1	ne. 2	ne. 1	o 1	o 1	1.8	0.8	24
ne. 3	ne. 3	o 2	o 1	o 2	o 3	w. 2	ne. 1	o 2	o 1	1.7	0.8	25
ne. 1	ne. 0	o 1	o 1	se. 1	e. 1	o 2	e. 1	o 1	o 2	1.5	0.7	26
o 1	o 1	o 1	e. 1	o 0	o 1	o 1	o 1	ne. 2	o 1	0.9	0.4	27
o 1	o 0	o 1	o 1	o 1	o 1	o 0	o 1	o 1	o 0	0.9	0.4	28
o 1	se. 2	se. 3	o 2	e. 3	e. 7	ne. 5	ne. 3	ne. 3	ne. 2	1.7	0.8	29
se. 1	o 2	e. 1	se. 2	nw. 1	e. 3	se. 1	o 1	o 0	o 1	1.5	0.7	30
e. 2	se. 1	se. 1	o 0	o 2	se. 2	e. 4	e. 5	e. 3	e. 5	1.7	0.8	31
1.7	2.0	2.2	2.1	2.0	2.2	1.9	2.1	1.9	2.3	2.01	---------	
0.8	0.9	1.0	0.9	0.9	1.0	0.8	0.9	0.8	1.0	0.9	0.9	

[a] From dial reading.

NOVEMBER, 1881.

TABLE CVIII.—*Direction and velocity of the wind, November, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	se. 2	0 1	0 1	0 1	0 0	se. 2	0 1	se. 1	0 2	ne. 1	0 1	w. 1	w. 5	0 3
2	s. 3	sw. 2	0 1	0 0	0 1	0 0	0 1	0 0	0 1	0 0	0 1	0 2	0 0	0 0
3	0 1	ne. 0	ne. 1	0 2	0 1	e. 1	e. 2	e. 3	s. 0	e. 3	se. 5	0 1	0 1	0 1
4	e. 1	0 2	0 1	e. 3	e. 5	e. 6	e. 3	e. 4	0 2	ne. 5	ne. 2	ne. 0	ne. 6	ne. 6
5	ne. 4	0 3	e. 3	e. 4	e. 2	e. 3	se. 3	0 1	0 4	0 0	0 1	0 1	0 1	0 1
6	e. 2	e. 4	0 1	se. 1	s. 2	sw. 4	0 2	0 1	0 0	0 1	0 2	sw. 2	0 0	0 2
7	**n. 11**	**ne. 11**	ne. 10	ne. 10	ne. 8	ne. 8	ne. 10	**ne 11**	w. 8	w. 3	w. 1	0 1	0 1	0 0
8	0 1	0 1	0 0	s. 2	s. 1	s. 2	0 1	ne. 1	nw. 2	nw. 2	ne. 0	0 0	nw. 2	n. 2
9	e. 8	e. 9	e. 8	0 3	e. 3	e. 2	e. 5	e. 3	e. 5	e. 6	e. 4	ne. 6	ne. 4	ne. 6
10	ne. 5	ne. 2	n. 4	n. 2	ne. 5	ne. 4	n. 5	ne. 4	n. 4	ne. 5	ne. 2	ne. 3	ne. 1	0 0
11	ne. 0	0 1	0 0	0 0	0 1	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 1
12	e. 6	e. 8	e. 4	e. 3	2 5	3 3	e. 0	e. 3	0 1	0 0	0 0	0 1	0 0	0 0
13	0 0	0 0	ne. 2	ne. 2	0 1	0 1	0 0	0 0	0 1	0 0	0 1	se. 1	e. 2	0 0
14	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 1	0 1
15	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
16	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 1	0 1
17	0 2	0 0	0 1	0 0	0 0	0 1	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0
18	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
19	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 1	0 0	0 0	0 1
20	e. 2	e. 1	e. 2	e. 0	e. 2	0 0	0 1	0 0	0 1	0 0	0 1	0 1	0 2	e. 1
21	e. 5	e. 3	e. 2	ne. 6	ne. 4	ne. 3	ne. 4	nw. 4	se. 2	e. 1	nw. 1	0 1	ne. 3	e. 1
22	e. 2	e. 3	e. 2	e. 1	e. 3	0 3	e. 1	e. 3	e. 3	e. 2	ne. 1	0 2	e. 3	ne. 1
23	0 0	0 0	0 0	0 1	0 1	0 0	0 0	0 1	e. 3	0 0	e. 1	0 1	e. 1	e. 1
24	0 1	0 1	0 0	0 1	0 2	n. 1	0 0	0 1	0 0	0 1	0 0	0 1	0 1	0 0
25	0 1	0 0	0 2	0 2	ne. 1	ne. 3	e. 6	e. 7	n. 3	ne. 2	e. 6	0 4	0 2	0 1
26	0 0	0 1	0 1	0 1	0 0	0 1	0 2	0 0	n. 1	e. 3	e. 2	e. 3	nw. 1	0 0
27	e. 1	n. 1	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 1	0 0	0 0	0 1	0 0
28	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 0
29	0 0	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 1
30	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Means	**2.0**	1.8	1.5	1.6	1.6	1.6	1.6	1.7	1.6	1.2	1.1	1.1	1.3	1.0
Means in meters per second	**0.9**	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.5	0.5	0.5	0.6	0.4

NOVEMBER, 1881.

TABLE CVIII.—*Direction and velocity of the wind, November, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
sw. 1	ne. 2	nw. 4	nw. 1	0 2	0 1	e. 1	ne. 2	0 0	0 2	1.6	0.7	1
0 0	0 0	0 1	e. 1	0 1	0 1	s. 2	0 1	n. 1	0 0	0.8	0.4	2
0 1	0 2	0 0	0 2	0 1	0 1	0 2	0 4	0 0	0 1	1.5	0.7	3
ne. 2	0 5	e. 1	s. 2	e. 1	n. 1	ne. 1	n. 2	e. 4	e. 2	2.8	1.3	4
0 1	0 1	e. 2	nw. 1	0 1	e. 1	0 1	e. 1	e. 2	e. 3	1.7	0.8	5
0 1	0 1	0 1	e. 1	e. 7	e. 4	ne. 6	n. 7	n. 10	**n. 11**	3.1	1.4	6
0 1	0 0	0 0	0 1	0 0	nw. 1	0 0	0 0	nw. 1	nw. 1	4.1	1.8	7
0 1	0 0	0 0	0 1	0 0	e. 8	e. 10	e. 9	e. 9	e. 9	2.7	1.2	8
ne. 6	n. 5	ne. 7	ne. 8	ne. 8	nw. 7	e. 5	nw. 5	ne. 2	w. 4	**5.4**	**2.4**	9
e. 2	e. 2	ne. 2	ne. 2	0 0	0 1	0 0	e. 1	0 1	0 1	2.4	1.1	10
0 0	0 0	0 0	0 0	0 0	0 0	0 0	se. 1	ne. 3	e. 3	0.5	0.2	11
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1.5	0.7	12
0 0	e. 1	0 0	0 0	0 1	0 0	0 1	0 0	0 0	0 0	0.6	0.3	13
0 2	0 0	0 1	0 0	0 0	0 1	0 1	0 0	0 0	0 0	0.4	0.2	14
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	15
0 0	0 0	0 0	0 2	0 1	0 0	e. 0	0 1	0 0	e. 3	0.5	0.2	16
0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0.2	0.0	17
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	18
nw. 0	n. 3	0 0	0 1	0 1	0 0	0 1	0 0	0 0	0 1	0.4	0.2	19
0 2	0 2	e. 1	e. 1	0 1	0 0	0 0	0 0	0 1	e. 3	1.0	0.4	20
n. 2	e. 1	0 1	0 1	se. 2	e. 2	e. 3	e. 1	0 1	0 1	2.3	1.0	21
0 2	0 1	e. 2	0 0	e. 2	e. 1	0 0	0 0	0 1	e. 1	1.6	0.7	22
ne. 1	ne. 4	e. 4	ne. 3	0 5	0 1	0 1	0 1	0 0	0 0	1.2	0.5	23
e. 1	0 1	e. 1	ne. 2	e. 4	0 1	0 2	0 1	0 2	ne. 3	1.2	0.5	24
0 1	0 4	0 0	0 1	e. 3	0 1	se. 3	e. 2	ne. 3	se. 3	2.5	1.1	25
0 1	0 0	0 1	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0.8	0.4	26
0 1	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0.3	0.1	27
0 0	0 0	0 0	0 1	0 0	0 2	0 0	e. 2	sw. 6	0 1	0.5	0.2	28
e. 1	0 1	ne. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.2	0.0	29
0 0	0 0	0 0	0 0	0 2	0 3	0 0	0 2	e. 5	ne. 4	0.7	0.3	30
0.9	1.2	1.0	1.1	1.4	1.3	1.4	1.4	1.7	1.6	1.42	--------	
0.4	0.5	0.4	0.5	0.6	0.6	0.6	0.6	0.8	0.7	0.6	0.6	

DECEMBER, 1881.

TABLE CIX.—*Direction and velocity of the wind, December, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	se. 4	e. 1	e. 2	e. 3	0 0	ne. 2	0 1	n. 0	0 1	n. 1	n. 1	e. 2	0 1	0 0
2	ne. 3	ne. 2	0 0	0 1	0 0	ne. 1	0 0	n. 1	0 2	0 1	0 1	0 1	0 1	0 1
3	0 0	0 0	0 1	ne. 1	0 0	0 1	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0
4	0 0	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0
5	0 0	0 1	ne. 3	ne. 6	e. 4	e. 5	e. 5	e. 6	e. 5	nw. 3	nw. 3	e. 3	0 2	ne. 3
6	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 1	0 1	0 0	0 0
7	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
8	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0
9	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
10	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 4	e. 4	e. 5	e. 3	0 0
11	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 3	e. 5	0 1	se. 1	e. 3	e. 3
12	0 0	0 1	0 0	0 0	0 0	0 0	0 2	0 0	ne. 2	0 1	0 0	0 0	0 0	0 0
13	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 1	0 0
14	0 0	0 0	e. 0	e. 1	0 2	0 0	0 0	0 0	0 0	0 1	0 1	ne. 2	0 0	ne. 1
15	0 1	0 1	0 0	ne. 1	0 1	0 1	0 0	ne. 0	e. 1	e. 1	0 0	0 0	0 0	0 0
16	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
17	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
18	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
19	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
20	0 0	0 0	0 0	0 0	0 1	0 0	0 1	0 0	0 0	0 0	0 1	0 0	0 0	0 0
21	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
22	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
23	0 0	0 0	0 0	0 0	ne. 1	0 1	e. 2	ne. 6	ne. 7	ne. 7	ne. 5	ne. 3	ne. 6	e. 7
24	e. 3	e. 9	e. 15	e. 19	e. 16	e. 15	e. 16	e. 13	w. 9	0 0	w. 1	0 0	ne. 1	0 0
25	e. 8	ne. 10	se. 14	n. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
26	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 2	0 0	0 0	0 0	0 0	0 0	0 0
27	0 1	0 1	0 0	0 0	0 0	0 0	0 0	0 2	0 1	0 0	0 0	0 0	0 0	0 0
28	0 0	0 0	0 0	0 0	0 0	0 0	0 3	0 1	0 0	ne. 1	0 0	0 0	0 0	0 2
29	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1
30	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
31	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	se. 1	0 0	0 0	0 0	0 0
Means	0.7	0.8	0.8	1.1	0.8	0.8	1.0	1.0	1.0	0.8	0.7	0.6	0.6	0.6
Means in meters per second	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3

DECEMBER, 1881.

TABLE CIX.—*Direction and velocity of the wind, December, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81\ 44'$ $\lambda = -64^{\circ}\ 45' = -4^{h}\ 19^{m}$

[Velocity, miles per hour.]

3 p. m.		4 p. m.		5 p. m.		6 p. m.		7 p. m.		8 p. m.		9 p. m.		10 p. m.		11 p. m.		Midnight.		Mean daily velocity.		
Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Miles per hour.	Meters per second.	Date.
0	1	e.	1	nw.	1	0	0	0	1	ne.	1	0	1	0	0	se.	3	e.	1	1.2	0.5	1
0	0	0	1	0	2	0	1	0	0	w.	3	e.	1	se.	2	s.	2	0	1	1.1	0.5	2
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	3
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0.2	0.0	4
e.	4	nw.	5	e.	4	0	0	e.	0	e.	7	0	1	0	1	0	1	0	1	3.0	1.3	5
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	7
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0.0	0.0	8
0	0	e.	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	9
0	0	0	0	0	1	e.	2	0	1	0	0	0	0	0	0	0	0	0	0	0.9	0.4	10
e.	3	0	0	e.	4	e.	6	0	4	0	0	0	0	0	0	0	0	0	2	1.5	0.7	11
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	13
e.	3	e.	4	e.	2	e.	3	e.	1	e.	2	e.	3	e.	1	e.	3	e.	2	1.3	0.6	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.1	15
0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0.1	0.0	16
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.0	0.0	17
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	18
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	19
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	20
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	21
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	22
e.	12	se.	14	e.	15	e.	14	e.	11	e.	4	n.	1	0	0	0	0	0	0	4.8	2.1	23
0	0	0	0	e.	6	n.	6	e.	3	nw.	4	n.	8	n.	13	ne.	12	e.	4	**7.2**	**3.2**	24
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0	0.4	26
0	0	0	1	0	1	s.	6	0	0	0	1	0	0	e.	2	0	0	e.	1	0.4	0.2	26
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.2	0.0	27
0	1	0	0	0	0	0	1	n.	1	0	0	0	0	0	0	0	0	0	0	0.4	0.2	28
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	30
0	0	0	0	0	0	0	0	0	0	0	1	e.	1	0	0	0	0	0	0	0.1	0.0	31
0.8		0.9		**1.2**		**1.2**		0.7		0.8		0.6		0.6		0.7		0.5		0.80	....	
0.4		0.4		**0.5**		**0.5**		0.3		0.4		0.3		0.3		0.3		0.2		0.4	0.3	

JANUARY, 1882.

TABLE CX.—*Direction and velocity of the wind, January, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a.m. Direction and velocity.		2 a.m. Direction and velocity.		3 a.m. Direction and velocity.		4 a.m. Direction and velocity.		5 a.m. Direction and velocity.		6 a.m. Direction and velocity.		7 a.m. Direction and velocity.		8 a.m. Direction and velocity.		9 a.m. Direction and velocity.		10 a.m. Direction and velocity.		11 a.m. Direction and velocity.		Noon. Direction and velocity.		1 p.m. Direction and velocity.		2 p.m. Direction and velocity.	
1	0	0	0	0	0	1	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	2	ne.	1	ne.	6	ne.	1
2	0	0	0	0	0	0	0	0	n.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3	0	0	ne.	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	se.	2
5	e.	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	e.	1	e.	6	e.	3	e.	1	0	0	e.	6
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	e.	1	e.	4	e.	5	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	se.	1
9	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	se.	1	0	0	0	1	se.	1	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ne.	1	0	1	0	0	ne.	4	sw.	5	w.	2
13	e.	2	0	4	se.	2	0	2	0	0	e.	4	0	2	0	0	0	0	se.	1	e.	2	e.	2	se.	4	0	0
14	e.	2	0	1	e.	2	0	2	0	0	0	1	0	1	0	0	s.	1	0	0	0	0	0	0	0	1	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	e.	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	sw.	3	s.	7	sw.	15	ne.	20	ne.	52	ne.	53
17	ne.	26	ne.	25	ne.	23	ne.	13	n.	8	n.	6	sw.	3	se.	5	e.	7	ne.	7	w.	4	w.	1	0	0	0	0
18	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	se.	0	ne.	1	ne.	1	0	1	ne.	2
19	0	0	0	0	e.	2	0	3	0	0	0	0	0	1	0	0	0	0	0	0	ne.	1	0	0	0	0	ne.	1
20	0	1	0	0	0	0	0	0	se.	1	0	0	0	0	0	0	0	0	0	1	e.	1	0	0	0	0	0	0
21	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	e.	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	ne.	1	0	0	0	0	0	0	0	0	0	0	ne.	1	ne.	1	ne.	2	ne.	3	ne.	2	se.	6	se.	29
24	0	2	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	1	se.	1	se.	1	0	0
25	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	nw.	1	0	1	0	0	0	0	0	0	ne.	1
26	0	0	0	0	0	0	0	0	ne.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	se.	0	se.	2	0	0	ne.	1
29	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1
30	se.	1	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	ne.	4	ne.	3	n.	6
31	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	1	0	0	ne.	1	0	0	0	0	0	0	0	0
Means	1.2		1.1		1.1		0.9		0.5		0.4		0.4		0.4		0.6		1.0		1.3		1.5		2.5		**3.4**	
Means in meters per second	0.5		0.5		0.5		0.4		0.2		0.2		0.2		0.2		0.3		0.4		0.6		0.7		1.1		**1.5**	

JANUARY, 1882.

TABLE CX.—*Direction and velocity of the wind, January,* 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.		4 p. m.		5 p. m.		6 p. m.		7 p. m.		8 p. m.		9 p. m.		10 p. m.		11 p. m.		Midnight.		Mean daily velocity.		
Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Meters per second.	Miles per hour.	Date.
0	0	0	0	0	0	0	0	0	2	w.	7	w.	6	w.	2	0	0	0	1	1.5	0.7	1
0	3	sw.	2	0	2	e.	3	0	1	0	1	0	0	0	0	nw.	1	0	1	0.6	0.3	2
0	0	nw.	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	3
0	0	se.	3	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0.3	0.1	4
e.	3	e.	9	e.	7	e.	3	nw.	1	0	0	0	0	0	0	0	0	0	0	1.8	0.8	5
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.2	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	7
0	0	0	1	0	0	0	0	0	0	0	0	n.	2	nw.	2	se.	1	0	1	0.5	0.2	8
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	9
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	10
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.0	0.0	11
se.	5	s.	6	se.	6	w.	6	e.	6	s.	6	se.	5	se.	2	e.	1	e.	0	2.3	1.0	12
e.	1	nw.	3	0	0	e.	1	0	0	e.	3	0	1	0	1	e.	2	0	0	1.5	0.7	13
0	0	nw.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.2	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	15
ne.	60[a]	ne.	42[a]	ne.	36[a]	ne.	33[a]	ne.	28	ne.	17	ne.	20	ne.	24	ne.	19	ne.	24	**19.1**	**8.5**	16
0	0	0	1	e.	2	ne.	5	se.	3	0	0	e.	1	0	0	0	0	0	1	5.9	2.6	17
0	0	ne.	1	0	0	0	1	se.	2	0	0	e.	1	0	0	0	0	se.	2	0.6	0.3	18
0	0	0	0	0	1	ne.	1	0	0	0	1	0	0	0	0	0	0	0	0	0.5	0.2	19
0	0	0	0	0	1	0	0	0	0	0	0	ne.	1	0	0	0	0	0	1	0.3	0.1	20
0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.2	0.0	21
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0.0	0.0	22
se.	20	se.	18	se.	11	se.	18	se.	14	se.	1	0	3	ne.	1	ne.	4	0	2	6.1	2.7	23
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.4	0.2	24
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	se.	1	0.2	0.0	25
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	26
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	27
e.	1	0	0	ne.	1	e.	1	e.	1	e.	3	e.	2	0	0	ne.	4	ne.	1	0.8	0.4	28
0	0	0	0	0	0	0	0	se.	1	0	0	se.	0	0	1	0	1	0	0	0.3	0.1	29
ne.	6	0	0	e.	1	e.	3	se.	2	e.	1	e.	5	n.	2	se.	1	0	1	1.7	0.8	30
0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.3	0.1	31
3.3		2.8		2.2		2.4		2.0		1.7		1.6		1.2		1.2		1.2		1.50	---------	
1.5		1.3		1.0		1.1		0.9		0.8		0.7		0.5		0.5		0.5		0.7	0.6	

[a] From dial reading.

FEBRUARY, 1882.

TABLE CXI.—*Direction and velocity of the wind, February, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.		2 a. m.		3 a. m.		4 a. m.		5 a. m.		6 a. m.		7 a. m.		8 a. m.		9 a. m.		10 a. m.		11 a. m.		Noon.		1 p. m.		2 p. m.	
	Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.	
1	0	1	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	e.	1	e.	3	ne.	6	0	0	e.	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	e.	0	e.	3	0	0	se.	0	0	1	0	0	0	1
3	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	e.	3	0	1	0	0	0	0	0	0	0	1
4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	1	0	0	0	2	0	1	0	0	0	1	0	0	se.	1	0	0	0	0	0	0	0	1	0	0
7	0	0	0	0	0	1	0	0	0	1	0	0	e.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	e.	1	0	0
9	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
14	0	1	ne.	1	ne.	1	ne.	4	0	0	0	0	0	0	ne.	1	0	0	e.	1	0	0	0	0	0	1	0	0
15	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	se.	0	0	0	0	1	e.	3
16	ne.	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	ne.	1	0	0
17	s.	1	sw.	8	sw.	4	0	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	s.	1	0	0	se.	1
18	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	ne.	1	e.	0	e.	2	0	0	e.	1	e.	2
19	0	0	0	0	0	0	ne.	1	ne.	3	e.	2	0	0	e.	2	w.	1	0	0	e.	1	e.	2	ne.	1	0	0
20	0	0	0	0	0	1	0	1	ne.	1	0	0	s.	2	0	0	0	0	e.	1	0	0	0	1	e.	2	e.	1
21	ne.	2	e.	3	[illegible]	6	e.	1	e.	6	e.	6	0	2	0	0	e.	1	0	0	0	0	0	0	0	0	0	0
22	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	1	0	0	se.	1	se.	1	0	0	ne.	2	ne.	2	se.	1	se.	2	e.	1	0	0	0	0	ne.	2	0	0
24	0	0	0	0	0	0	e.	1	0	0	0	1	0	0	ne.	1	0	1	ne.	1	e.	2	0	0	e.	2	0	1
25	0	0	0	0	0	0	0	0	0	1	ne.	1	0	0	0	1	e.	1	e.	1	nw.	1	e.	1	0	4	nw.	1
26	n.	3	n.	1	n.	1	0	0	ne.	1	e.	1	0	3	0	1	se.	1	ne.	1	ne.	1	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	e.	1	se.	1	0	0	0	0	0	0
28	0	0	0	0	0	0	ne.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Means	0.5		0.6		0.8		0.6		0.6		0.6		0.6		0.4		0.6		0.3		0.4		0.5		0.7		0.4	
Means in meters per second	0.2		0.3		0.4		0.3		0.3		0.3		0.3		0.2		0.3		0.1		0.2		0.2		0.3		0.2	

FEBRUARY, 1882.

Table CXI.—*Direction and velocity of the wind, February,* 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.		4 p. m.		5 p. m.		6 p. m.		7 p. m.		8 p. m.		9 p. m.		10 p. m.		11 p. m.		Midnight.		Mean daily velocity.		
Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Miles per hour.	Meters per second.	Date.
e.	1	e.	4	e.	1	ne.	1	0	1	ne.	6	0	1	0	1	0	0	0	0	1.3	0.6	1
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	se.	1	0	0	0.3	0.1	2
0	0	0	0	0	0	e.	2	se.	1	0	0	se.	1	e.	1	0	0	nw.	1	0.6	0.3	3
0	0	ne.	1	0	0	0	0	0	0	0	0	0	0	nw.	1	0	0	0	1	0.2	0.0	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	0.0	5
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0.4	0.2	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	7
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.2	0.0	8
0	0	0	0	0	0	0	0	0	0	0	0	ne.	1	0	0	0	0	ne.	1	0.1	0.0	9
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	10
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	11
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	12
0	1	0	0	0	0	0	1	0	1	ne.	0	0	4	ne.	1	n.	1	0	2	0.5	0.2	13
0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0.5	0.2	14
0	1	0	1	0	1	ne.	1	nw.	1	0	0	se.	2	0	0	0	0	ne.	3	0.8	0.4	15
ne.	1	e.	1	0	0	ne.	1	ne.	1	e.	2	0	0	ne.	1	ne.	1	0	0	0.6	0.3	16
0	0	e.	1	e.	1	e.	2	ne.	6	e.	3	ne.	2	e.	2	ne.	4	se.	2	1.8	0.8	17
0	1	0	0	ne.	2	ne.	1	n.	1	sw.	5	n.	3	nw.	2	0	0	0	1	1.0	0.4	18
ne.	1	0	0	0	0	0	0	0	1	n.	1	0	0	0	0	0	1	0	0	0.7	0.3	19
e.	1	e.	3	0	0	nw.	3	n.	1	n.	1	0	0	ne.	2	0	1	ne.	1	1.0	0.4	20
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1	0.5	21
nw.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	se.	1	0	0	0.2	0.0	22
e.	1	0	0	se.	1	0	0	se.	1	0	1	0	0	0	0	0	0	0	1	0.8	0.4	23
0	1	sw.	1	e.	1	e.	3	0	0	0	0	e.	1	0	0	0	0	0	0	0.7	0.3	24
e.	1	se.	1	se.	1	e.	3	se.	4	e.	2	se.	3	se.	1	se.	2	n.	2	1.3	0.6	25
0	0	0	0	0	1	0	0	e.	2	0	1	e.	3	0	0	0	0	0	1	0.9	0.4	26
0	0	e.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	27
ne.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	s.	7	0.3	0.1	28
0.4		0.5		0.3		0.7		0.8		0.8		0.8		0.5		0.4		0.9		0.56	--------	
0.2		0.2		0.1		0.3		0.4		0.4		0.4		0.2		0.2		0.4		0.3	0.2	

MARCH, 1882.

TABLE CXII.—*Direction and velocity of the wind, March, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	0 2	0 1	0 0	0 1	se. 7	0 3	e. 1	0 0	s. 7	s. 8	0 3	0 1	0 1	0 0
2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
4	0 0	0 0	0 0	s. 1	0 1	ne. 2	0 1	e. 2	e. 3	n. 3	se. 3	0 1	0 0	0 0
5	0 0	se. 2	e. 2	0 1	e. 1	ne. 2	e. 1	e. 2	e. 3	0 3	e. 2	0 2	0 0	0 0
6	0 1	0 0	0 0	0 0	e. 16	e. 18	e. 12	e. 9	se. 8	e. 8	0 4	0 1	e. 3	e. 1
7	ne. 11	n. 3	se. 2	0 2	0 2	ne. 2	nw. 2	e. 1	nw. 0	0 0	0 0	0 0	sw. 0	0 1
8	0 0	0 0	ne. 3	0 0	e. 3	ne. 1	e. 1	ne. 2	ne. 1	ne. 1	0 0	0 0	0 1	0 0
9	ne. 1	n. 4	ne. 1	0 0	e. 1	0 0	ne. 1	0 0	0 0	0 0	0 0	0 1	0 0	0 0
10	e. 1	ne. 1	0 0	s. 1	s. 2	se. 1	0 0	n. 5	0 0	e. 1	0 0	0 0	ne. 1	0 0
11	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
12	0 0	0 0	0 0	0 0	e. 4	e. 4	ne. 2	ne. 2	0 1	n. 3	0 1	0 1	n. 4	e. 2
13	0 0	0 0	e. 1	0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0
14	se. 1	se. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
15	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
16	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
17	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
18	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	ne. 1
19	ne. 2	n. 2	se. 2	0 0	s. 1	s. 1	0 0	0 0	0 0	se. 1	ne. 1	0 0	0 0	0 0
20	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
21	ne. 5	e. 3	s. 7	s. 6	s. 12	s. 3	s. 8	s. 12	s. 8	s. 8	s. 7	s. 4	e. 9	ne. 4
22	0 0	e. 1	0 0	0 0	0 0	w. 1	0 0	0 0	ne. 1	0 0	0 0	ne. 1	ne. 3	e. 1
23	e. 2	0 0	0 0	e. 1	0 0	nw. 0	se. 2	0 0	0 0	ne. 1	0 0	ne. 1	0 0	0 0
24	se. 0	0 0	se. 1	0 0	0 0	e. 1	0 0	e. 1	0 0	e. 1	s. 1	0 0	0 0	0 0
25	0 0	0 0	0 0	0 0	0 0	0 1	e. 0	0 0	0 0	e. 1	0 0	e. 1	e. 1	0 0
26	0 0	ne. 1	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 1	e. 1	0 0	e. 1	e. 1
27	0 0	0 0	se. 1	n. 1	ne. 1	se. 2	0 0	sw. 1	ne. 0	e. 1	0 0	e. 2	e. 1	0 0
28	s. 1	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 1	e. 0	0 0	e. 1	0 0	0 0
29	0 0	e. 0	0 1	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0
30	0 0	e. 1	e. 2	e. 1	0 0	e. 1	e. 1	e. 1	n. 2	sw. 2	s. 2	e. 1	e. 3	0 1
31	ne. 7	s. 4	s. 1	n. 4	se. 2	s. 4	e. 1	e. 4	e. 2	e. 8	e. 8	ne. 8	ne. 3	0 0
Means	1.1	0.8	0.8	0.6	1.7	1.6	1.1	1.4	1.2	1.6	1.1	0.8	1.0	0.7
Meads in meters per second	0.5	0.4	0.4	0.3	0.8	0.7	0.5	0.6	0.5	0.7	0.5	0.4	0.4	0.3

MARCH, 1882.

TABLE CXII.—*Direction and velocity of the wind, March, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
0 0	0 0	0 0	0 1	0 0	0 0	0 0	0 0	0 0	0 0	1.5	0.7	1
0 0	0 0	ne. 0	ne. 0	e. 1	e. 2	ne. 1	0 0	nw. 1	0 0	0.2	0.0	2
0 0	0 0	0 0	0 0	ne. 0	ne. 2	s. 2	se. 4	0 1	ne. 1	0.4	0.2	3
0 0	0 0	0 0	0 0	nw. 1	0 0	ne. 1	0 0	0 0	se. 1	0.8	0.4	4
w. 5	w. 6	sw. 9	sw. 12	sw. 11	sw. 11	w. 9	s. 5	0 1	0 0	0.4	0.2	5
e. 10	0 7	ne. 0	ne. 7	ne. 12	ne. 8	ne. 5	ne. 8	ne. 11	ne. 10	7.0	3.1	6
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1.1	0.5	7
0 0	n. 1	0 0	nw. 1	0 0	n. 1	0 0	0 0	0 0	ne. 1	0.7	0.3	8
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0.4	0.2	9
0 0	0 0	0 0	ne. 2	ne. 1	e. 1	0 0	se. 1	nw. 1	0 0	0.8	0.4	10
0 0	0 0	0 0	0 0	0 0	0 2	0 1	0 0	0 0	0 0	0.1	0.0	11
e. 2	e. 2	e. 1	0 0	0 0	e. 1	e. 2	sw. 2	e. 1	e. 2	1.5	0.7	12
e. 1	0 0	0 0	0 0	se. 1	0 0	0 0	0 0	0 0	0 0	0.2	0.0	13
0 0	0 0	0 0	se. 1	0 0	0 0	0 0	0 0	0 0	0 0	0.1	0.0	14
0 0	0 0	0 1	e. 1	ne. 1	0 0	ne. 0	0 0	0 0	0 0	0.1	0.0	15
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0.1	0.0	16
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	17
0 0	ne. 1	0 0	e. 1	0 0	0 0	e. 1	0 1	se. 0	0 0	0.3	0.1	18
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1	0 0	0.5	0.2	19
0 0	se. 1	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1	ne. 3	0.2	0.0	20
e. 4	ne. 9	e. 6	e. 7	e. 2	ne. 2	e. 3	e. 4	0 0	0 0	5.5	2.5	21
0 0	ne. 1	e. 1	se. 1	0 0	e. 1	0 0	0 0	ne. 2	ne. 1	0.6	0.3	22
ne. 1	ne. 1	0 0	0 0	0 0	se. 1	0 0	e. 1	0 0	0 0	0.5	0.2	23
0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	ne. 1	0.3	0.1	24
0 0	0 1	0 0	e. 1	w. 1	0 0	ne. 1	se. 1	n. 1	0 0	0.4	0.2	25
0 0	e. 2	0 0	ne. 1	ne. 2	se. 1	nw. 1	0 0	0 0	0 0	0.5	0.2	26
s. 2	e. 1	0 0	nw. 1	e. 1	0 0	e. 1	nw. 2	0 1	0 0	0.8	0.4	27
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0.2	0.0	28
0 0	0 0	0 0	0 0	ne. 1	ne. 1	0 0	se. 1	0 0	0 0	0.2	0.0	29
e. 0	e. 1	e. 3	se. 1	s. 10	se. 20	se. 15	s. 5	0 1	s. 9	3.5	1.6	30
e. 1	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 1	2.5	1.1	31
0.8	1.1	0.7	1.3	1.5	1.8	1.4	1.1	0.8	1.0	1.13	--------	
0.4	0.5	0.3	0.6	0.7	0.8	0.6	0.5	0.4	0.4	0.5	0.4	

APRIL, 1882.

TABLE CXIII.—*Direction and velocity of the wind, April, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour].

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	0 0	0 0	0 0	0 0	0 0	0 0	se. 1	0 0	0 0	0 0	e. 1	0 0	e. 1	e. 1
2	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 2	0 0	0 0	ne. 1	0 0
3	s. 2	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	e. 1	0 1	e. 1	se. 0	0 0	0 0
4	e. 2	e. 1	e. 2	n. 4	e. 2	n. 2	0 0	e. 2	ne. 1	ne. 1	ne. 1	ne. 1	ne. 2	ne. 1
5	n. 2	n. 2	nw. 1	nw. 1	n. 2	e. 2	ne. 5	ne. 5	ne. 3	w. 3	w. 2	s. 3	se. 7	se. 4
6	e. 2	se. 4	n. 2	e. 2	nw. 3	n. 2	ne. 2	e. 1	e. 2	e. 5	e. 2	e. 1	e. 1	e. 1
7	e. 2	ne. 2	ne. 1	ne. 2	ne. 1	ne. 1	e. 2	e. 3	n. 3	e. 1	e. 2	e. 1	e. 1	se. 1
8	e. 1	e. 1	e. 1	e. 2	e. 1	e. 2	nw. 4	s. 2	n. 2	nw. 1	s. 1	nw. 3	n. 2	e. 5
9	s. 14	s. 18	s. 19	sw. 16	s. 15	ne. 9	se. 6	e. 4	e. 5	se. 4	se. 4	se. 3	se. 2	se. 6
10	e. 3	se. 3	w. 4	s. 3	se. 2	e. 2	se. 3	e. 2	se. 2	se. 3	se. 2	e. 2	e. 2	e. 3
11	e. 9	s. 9	e. 7	e. 3	ne. 3	se. 3	e. 3	ne. 5	e. 2	e. 2	e. 3	s. 6	s. 2	s. 3
12	se. 5	e. 3	s. 3	e. 2	s. 2	e. 3	e. 2	e. 2	e. 2	e. 2	e. 1	w. 3	sw. 1	n. 1
13	sw. 1	ne. 2	s. 2	s. 2	s. 1	s. 3	n. 2	ne. 4	se. 2	se. 2	se. 3	n. 1	se. 2	ne. 2
14	e. 2	ne. 2	e. 1	n. 2	ne. 2	n. 2	e. 2	n. 1	e. 2	se. 2	se. 2	se. 2	sw. 2	nw. 1
15	e. 4	n. 3	n. 3	s. 4	se. 3	e. 2	se. 2	e. 2	se. 1	se. 2	se. 1	nw. 2	nw. 1	ne. 2
16	n. 3	nw. 2	e. 3	ne. 2	n. 5	e. 4	n. 4	n. 4	s. 2	e. 2	e. 2	ne. 6	ne. 11	e. 7
17	ne. 3	se. 3	n. 2	e. 1	e. 4	n. 2	e. 2	e. 1	se. 1	se. 1	sw. 1	n. 1	n. 1	e. 1
18	s. 2	se. 2	n. 3	e. 2	e. 1	0 0	se. 1	0 1	sw. 1	sw. 2	se. 1	se. 1	s. 2	w. 1
19	se. 1	0 0	w. 2	s. 2	s. 2	s. 2	n. 1	n. 1	0 0	w. 1	sw. 1	sw. 2	sw. 2	sw. 2
20	e. 4	e. 4	e. 6	e. 3	e. 3	ne. 1	e. 2	0 0	0 0	0 0	e. 1	e. 1	e. 0	n. 1
21	se. 2	se. 1	ne. 1	e. 2	ne. 5	ne. 2	n. 2	ne. 2	n. 1	ne. 3	e. 1	ne. 3	n. 3	e. 2
22	s. 12	se. 7	s. 8	s. 21	s. 16	s. 14	s. 15	s. 8	se. 15	s. 5	s. 14	s. 7	s. 9	s. 22
23	n. 5	sw. 9	sw. 22	sw. 17	w. 11	sw. 7	n. 6	ne. 4	e. 4	e. 3	e. 1	n. 3	e. 4	e. 3
24	se. 3	se. 3	se. 2	se. 3	s. 2	ne. 1	n. 2	nw. 2	n. 1	se. 1	ne. 2	sw. 2	n. 2	nw. 3
25	se. 2	ne. 1	e. 9	e. 22	**e. 26**	se. 24	e. 22	e. 18	e. 16	s. 7	sw. 3	w. 5	nw. 2	sw. 3
26	e. 8	e. 4	e. 2	w. 5	ne. 2	e. 1	ne. 1	0 0	w. 1	w. 1	w. 1	0 0	s. 1	s. 1
27	e. 3	e. 2	se. 2	se. 2	e. 1	ne. 1	0 0	se. 1	0 0	w. 1	sw. 1	w. 1	w. 2	w. 2
28	w. 3	w. 5	e. 5	e. 4	ne. 3	e. 1	s. 1	sw. 1	0 0	s. 1	s. 1	s. 1	s. 1	s. 1
29	e. 2	e. 6	e. 1	ne. 1	ne. 1	ne. 3	ne. 1	e. 2	n. 1	n. 2	n. 2	nw. 1	nw. 2	nw. 3
30	e. 1	se. 2	e. 1	e. 1	e. 1	ne. 1	ne. 1	ne. 1	0 1	nw. 1	w. 1	nw. 2	nw. 2	w. 2
Means	3.4	3.4	3.9	**4.4**	4.0	3.3	3.2	2.6	2.4	2.7	2.0	2.1	2.4	2.8
Means in meters per second	1.5	1.5	1.7	**2.0**	1.8	1.5	1.4	1.2	1.1	1.2	0.9	0.9	1.1	1.3

APRIL, 1882.

TABLE CXIII.—*Direction and velocity of the wind, April,* 1882.

Washington mean time. Reduce to local mean t me by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = 64° 45' = -4^h 19^m$

[Velocity, miles per hour].

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		Date.
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	
e. 1	o o	o o	ne. 1	ne. 4	ne. 6	nw. 2	ne. 1	o 1	o o	0.8	0.4	1
o o	o o	o o	e. 1	o o	o o	e. 1	ne. 1	o o	o o	0.3	0.1	2
se. 4	se. 1	e. 2	e. 2	e. 3	ne. 1	ne. 2	e. 2	n. 2	n. 1	1.1	0.5	3
se. 1	e. 2	e. 1	e. 2	e. 1	e. 2	e. 1	e. 2	e. 1	ne. 2	1.5	0.7	4
se. 4	se. 2	se. 2	se. 3	se. 2	e. 6	e. 6	e. 5	e. 5	e. 4	3.4	1.5	5
se. 2	e. 2	n. 1	n. 3	n. 1	n. 2	sw. 2	s. 3	e. 3	e. 2	2.1	0.9	6
se. 1	se. 2	e. 1	e. 1	e. 1	e. 2	e. 2	e. 1	e. 2	e. 2	1.6	0.7	7
se. 3	se. 11	e. 2	e. 3	e. 11	e. 17	e. 15	e. 21	se. 16	s. 13	5.8	2.6	8
se. 7	se. 5	s. 5	s. 3	s. 14	s. 4	se. 4	se. 2	se. 4	sw. 2	6.9	3.1	9
n. 3	sw. 2	e. 4	e. 3	se. 4	se. 4	e. 6	ne. 7	ne. 3	e. 8	3.3	1.5	10
s. 8	s. 3	ne. 4	se. 3	e. 3	e. 3	se. 3	e. 3	e. 3	e. 4	4.1	1.8	11
n. 1	n. 1	e. 1	se. 2	s. 2	e. 1	ne. 1	e. 2	ne. 1	sw. 1	1.9	0.8	12
se. 2	se. 3	o o	o o	o o	s. 1	se. 1	ne. 2	s. 2	se. 1	1.7	0.8	13
nw. 2	ne. 2	n. 3	ne. 1	s. 3	ne. 1	ne. 2	ne. 3	ne. 3	ne. 1	1.9	0.8	14
n. 2	sw. 2	e. 1	se. 2	se. 2	w. 5	se. 9	ne. 13	s. 4	se. 3	3.1	1.4	15
se. 3	se. 3	se. 2	s. 2	se. 1	ne. 2	n. 2	ne. 3	ne. 3	ne. 3	3.4	1.5	16
n. 1	n. 1	ne. 2	sw. 1	w. 1	e. 2	se. 2	se. 1	se. 1	e. 3	1.6	0.7	17
sw. 1	o o	sw. 11	sw. 1	s. 1	se. 1	se. 1	e. 1	se. 1	o o	1.2	0.5	18
sw. 1	ne. 3	se. 3	ne. 2	e. 4	e. 9	e. 5	e. 8	e. 8	e. 7	2.9	1.3	19
o o	o 1	e. 1	ne. 1	se. 1	w. 3	n. 1	n. 2	se. 2	e. 2	1.7	0.8	20
ne. 1	e. 2	s. 2	ne. 1	e. 2	se. 2	n. 1	s. 5	s. 22	s. 16	3.5	1.6	21
s. 21	s. 20	s. 25	s. 23[a]	s. 22[a]	s. 24[a]	s. 25[a]	se. 13[a]	s. 12	ne. 9	**16.1**	**7.2**	22
n. 5	ne. 5	e. 4	se. 5	sw. 4	se. 5	se. 3	ne. 2	ne. 2	e. 2	5.7	2.5	23
nw. 1	n. 2	nw. 1	n. 1	sw. 1	w. 2	ne. 1	n. 3	w. 1	ne. 2	1.8	0.8	24
n. 3	s. 2	ne. 2	**ne. 26**	ne. 5	ne. 9	n. 7	e. 3	e. 6	ne. 7	8.8	3.9	25
w. 1	w. 1	n. 1	nw. 1	n. 1	s. 1	se. 3	se. 2	se. 4	e. 3	1.9	0.8	26
sw. 1	sw. 2	w. 2	ne. 1	n. 3	ne. 2	e. 2	e. 3	ne. 3	w. 4	1.7	0.8	27
s. 2	w. 1	w. 2	n. 2	n. 4	o o	ne. 1	n. 1	ne. 2	e. 3	1.9	0.8	28
nw. 1	nw. 2	nw. 1	o o	nw. 2	nw. 1	nw. 1	nw. 1	w. 1	se. 2	1.7	0.8	29
n. 3	n. 2	n. 1	nw. 2	nw. 3	nw. 3	nw. 1	nw. 1	nw. 1	nw. 2	1.5	0.7	30
2.9	2.8	2.6	2.6	3.2	4.0	3.8	3.9	4.0	3.6	3.16	--------	
1.3	1.3	1.2	1.2	1.4	1.8	1.7	1.7	1.8	1.6	1.4	1.4	

[a] From dial reading.

1 p. m.	2 p. m.
Direction and velocity.	Direction and velocity.
e. 1	e. 1
ne. 1	o o
o o	o o
ne. 2	ne. 1
se. 7	se. 4
e. 1	e. 1
e. 1	se. 1
n. 2	e. 5
se. 2	se. 6
e. 2	e. 3
s. 2	s. 3
sw. 1	n. 1
se. 2	ne. 2
sw. 2	nw. 1
nw. 1	ne. 2
ne. 11	e. 7
n. 1	e. 1
s. 2	w. 1
sw. 2	sw. 2
e. o	n. 1
n. 3	e. 2
s. 9	s. 22
e. 4	e. 3
n. 2	nw. 3
nw. 2	sw. 3
s. 1	s. 1
w. 2	w. 2
s. 1	s. 1
nw. 2	nw. 3
nw. 2	w. 2
2.4	2.8
1.1	1.3

MAY, 1882.

TABLE CXIV.—*Direction and velocity of the wind, May, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	ne. 1	n. 2	0 0	ne. 1	n. 1	n. 1	n. 2	0 0	n. 2	sw. 1	n. 1	n. 1	nw. 2	nw. 1
2	0 0	e. 2	w. 1	w. 1	0 0	0 0	w. 2	0 0	w. 1	w. 1	w. 1	w. 2	w. 1	w. 1
3	e. 4	ne. 4	ne. 1	nw. 3	e. 7	ne. 3	s. 15	s. 8	sw. 12	s. 10	s. 19	se. 16	s. 12	se. 10
4	s. 3	e. 10	e. 18	ne. 14	ne. 15	ne. 11	sw. 6	s. 8	s. 3	ne. 2	nw. 2	n. 2	n. 1	nw. 2
5	w. 3	w. 1	nw. 1	ne. 1	ne. 1	ne. 1	ne. 2	ne. 1	w. 1	s. 1	nw. 1	sw. 1	nw. 2	nw. 1
6	ne. 2	0 1	ne. 1	0 0	e. 1	e. 1	e. 2	w. 1	sw. 1	s. 1	nw. 2	s. 2	nw. 1	se. 2
7	e. 3	ne. 2	s. 4	sw. 2	e. 2	sw. 3	s. 2	s. 14	s. 2	s. 1	se. 2	nw. 1	nw. 2	nw. 3
8	0 0	e. 2	e. 3	ne. 2	n. 4	n. 12	**e. 21**	sw. 11	s. 7	e. 4	sw. 8	se. 3	e. 7	e. 13
9	n. 6	n. 5	ne. 4	ne. 3	ne. 7	ne. 2	sw. 1	sw. 1	w. 2	sw. 1	sw. 1	sw. 1	sw. 2	sw. 2
10	0 0	ne. 2	s. 2	s. 1	sw. 1	0 0	s. 2	se. 2	s. 1	s. 1	w. 1	w. 2	w. 2	w. 2
11	n. 5	ne. 5	e. 2	se. 1	w. 1	0 0	s. 1	w. 1	w. 1	nw. 1	w. 1	w. 2	w. 1	w. 2
12	0 0	0 0	0 0	0 0	0 0	0 0	w. 1	s. 1	s. 2	s. 2	s. 3	s. 3	s. 2	s. 1
13	n. 1	n. 1	nw. 1	ne. 2	s. 3	se. 14	se. 13	s. 7	s. 6	ne. 3	sw. 2	s. 15	s. 17	s. 9
14	e. 7	ne. 5	ne. 3	nw. 1	n. 1	n. 1	ne. 1	se. 1	se. 2	s. 1	s. 2	s. 3	s. 1	s. 1
15	nw. 2	nw. 2	nw. 2	n. 1	n. 1	nw. 1	n. 1	n. 1	n. 1	n. 2	w. 1	w. 1	w. 2	w. 1
16	sw. 7	ne. 4	sw. 3	sw. 4	nw. 6	sw. 2	sw. 14	se. 5	se. 3	se. 3	sw. 3	s. 5	s. 3	s. 3
17	s. 1	s. 1	w. 1	sw. 1	s. 1	sw. 2	s. 1	se. 1	se. 1	se. 1	s. 1	s. 1	s. 0	s. 1
18	s. 1	s. 1	sw. 1	nw. 1	0 0	w. 1	nw. 1	0 0	n. 1	n. 2	n. 0	n. 1	n. 1	n. 1
19	n. 7	n. 5	ne. 3	n. 3	n. 1	n. 2	n. 1	ne. 1	0 0	n. 1	n. 1	n. 1	n. 1	n. 1
20	ne. 9	ne. 3	n. 5	ne. 1	ne. 1	nw. 1	ne. 1	ne. 1	ne. 2	ne. 1	ne. 1	ne. 1	ne. 2	ne. 1
21	ne. 2	n. 1	e. 2	se. 2	e. 2	nw. 1	se. 2	se. 2	0 1	e. 2	se. 1	0 0	ne. 2	n. 1
22	sw. 3	s. 1	n. 1	ne. 2	s. 1	se. 1	se. 1	se. 1	s. 3	s. 3	s. 2	s. 3	s. 2	e. 9
23	e. 6	ne. 7	se. 3	e. 4	ne. 3	se. 2	w. 2	nw. 1	nw. 3	nw. 2	s. 3	s. 2	s. 3	s. 2
24	ne. 1	ne. 1	n. 1	ne. 1	ne. 1	n. 2	n. 1	ne. 1	ne. 1	w. 2	w. 1	w. 2	w. 2	nw. 2
25	ne. 2	n. 3	n. 2	nw. 3	n. 6	n. 5	n. 6	ne. 3	ne. 4	ne. 3	ne. 2	sw. 2	sw. 3	sw. 2
26	ne. 2	n. 2	n. 1	ne. 2	ne. 1	0 0	ne. 1	se. 1	se. 1	se. 1	se. 1	se. 2	se. 3	se. 1
27	n. 3	n. 1	e. 1	se. 2	n. 3	s. 3	e. 2	w. 1	sw. 2	s. 3	s. 2	s. 3	s. 3	s. 6
28	s. 7	s. 10	s. 14	se. 13	s. 7	s. 5	ne. 1	ne. 2	ne. 1	ne. 2	w. 2	w. 3	w. 2	w. 2
29	n. 5	ne. 5	s. 5	n. 3	n. 6	e. 3	w. 3	nw. 3	nw. 2	nw. 4	n. 4	n. 4	n. 3	n. 4
30	e. 15	e. 11	e. 17	e. 17	e. 16	e. 16	e. 14	e. 16	e. 14	e. 16	e. 14	e. 13	e. 10	e. 4
31	w. 1	s. 1	sw. 2	sw. 2	s. 1	s. 1	w. 2	ne. 2	e. 1	e. 3	e. 2	e. 14	e. 2	e. 1
Means	3.5	3.3	3.4	3.0	3.3	3.1	3.7	2.8	2.7	2.6	2.8	3.3	3.1	3.0
Means in meters per second	1.6	1.5	1.5	1.3	1.5	1.4	1.7	1.3	1.2	1.2	1.3	1.5	1.4	1.3

MAY, 1882.

TABLE CXIV.—*Direction and velocity of the wind, May, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
nw. 1	nw. 1	nw. 2	o o	nw 1	nw. 1	nw. 1	nw. 1	e. 3	se. 3	1.2	0.5	1
w. 2	w. 1	n. 5	n. 2	n. 2	n. 2	se. 2	n. 3	n. 2	ne. 3	1.5	0.7	2
s. 7	s. 15	s. 12	s. 14	ne. 5	e. 7	e. 7	ne. 6	e. 5	ne. 9	8.8	3.9	3
s. 1	s. 3	n. 2	n. 1	n. 1	n. 4	ne. 4	n. 3	sw. 2	w. 2	5.0	2.2	4
nw. 2	se. 1	w. 1	w. 1	w. 1	w. 1	w. 1	ne. 1	w. 2	o o	1.2	0.5	5
nw. 1	nw. 2	nw. 1	ne. 1	w. 1	se. 2	e. 2	e. 1	ne. 6	e. 8	1.9	0.8	6
e. 12	e. 16	sw. 10	se. 3	e. 2	e. 2	e. 2	se. 3	se. 2	s. 1	3.6	1.6	7
e. 18	e. 17	sw. 12	nw. 6	e. 4	e. 12	e. 10	s. 7	e. 6	ne. 6	8.2	3.7	8
sw. 1	sw. 1	nw. 1	se. 3	e. 1	e. 6	e. 6	n. 9	e. 3	se. 2	3.0	1.3	9
sw. 1	sw. 1	w. 2	ne. 1	ne. 1	ne. 1	ne. 1	ne. 1	ne. 1	ne. 2	1.3	0.6	10
w. 1	w. 2	w. 3	nw. 1	nw. 1	o o	w. 1	nw. 1	n. 1	w. 1	1.5	0.7	11
o 2	nw. o	n. 2	e. 1	w. 2	o o	w. 1	nw. 1	o o	o o	1.0	0.4	12
s. 2	s. 15	e. 10	e. 13	e. 9	e. 15	e. 19	e. 18	e. 17	e. 14	9.4	4.2	13
s. 2	s. 1	ne. 1	nw. 1	nw. 2	nw. 1	nw. 2	nw. 2	nw. 3	nw. 2	2.0	0.9	14
w. 1	n. 1	ne. 12	ne. 16	ne. 17	ne. 16	ne. 19	ne. 16	ne. 14	ne. 14	6.0	2.7	15
s. 1	s. 1	nw. 1	sw. 2	nw. 1	nw. 2	s. 1	s. 2	s. 1	o o	2.8	1.3	16
w. 1	w. 1	w. 1	w. 1	s. 2	s. 2	s. 2	o o	s. 1	o o	1.0	0.4	17
n. 1	n. 1	n. 1	o o	n. 1	n. 2	ne. 1	w. 2	nw. 7	n. 5	1.4	0.6	18
n. 1	n. 3	s. 2	w. 1	se. 2	ne. 2	se. 3	ne. 5	ne. 2	ne. 4	2.2	1.0	19
ne. 1	ne. 2	s. 1	w. 1	w. 1	sw. 3	ne. 1	ne. 2	ne. 5	ne. 3	2.1	0.9	20
e. 1	e. 1	s. 1	s. 2	s. 2	e. 4	se. 2	s. 6	s. 1	s. 3	1.8	0.8	21
e. 3	e. 8	s. 6	s. 3	s. 1	s. 1	s. 1	s. 1	nw. 3	ne. 3	2.6	1.2	22
s. 2	s. 3	n. 2	n. 5	nw. 1	ne. o	ne. 2	se. 1	w. 1	ne. 2	2.6	1.2	23
nw. 1	nw. 2	nw. 1	n. 5	nw. 3	n. 1	nw. 3	n. 6	ne. 4	n. 2	2.0	0.9	24
sw. 2	sw. 3	sw. 3	s. 3	w. 2	sw. 4	sw. 1	sw. 1	ne. 1	e. 1	2.8	1.3	25
sw. 2	sw. 1	n. 2	s. 2	n. 1	n. 2	ne. 2	o o	w. 1	s. 1	1.4	0.6	26
s. 12	se. 8	s. 4	se. 9	s. 10	se. 11	s. 12	s. 10	s. 14	s. 12	5.7	2.5	27
s. 2	s. 14	se. 17	s. 14	s. 14	s. 17	se. 18	se. 13	se. 14	n. 8	8.4	3.8	28
s. 3	se. 10	e. 13	se. 6	e. 7	n. 3	n. 1	w. 2	e. 2	e. 17	4.9	2.2	29
e. 3	e. 2	s. 4	e. 7	s. 4	s. 3	s. 4	nw. 3	w. 2	s. 3	9.5	1.2	30
e. 2	e. 2	s. 2	sw. 14	sw. 2	sw. 3	sw. 2	sw. 3	sw. 2	e. 3	2.1	0.9	31
3.0	4.5	4.4	4.2	3.4	4.2	4.3	4.2	4.1	4.3	3.51	......	
1.3	2.0	2.0	1.9	1.5	1.9	1.9	1.9	1.8	1.9	1.6	1.6	

JUNE, 1882.

TABLE CXV.—*Direction and velocity of the wind, June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	ne. 2	se. 1	nw. 2	0 0	e. 1	e. 1	e. 1	e. 1	0 0	se. 2	e. 1	se. 2	e. 2	e. 1
2	nw. 7	n. 4	se. 3	0 0	se. 1	s. 1	se. 1	se. 2	se. 2	se. 2	s. 2	s. 2	s. 3	s. 3
3	s. 2	sw. 2	s. 1	s. 1	0 0	ne. 2	se. 1	s. 1	s. 1	se. 2	se. 2	se. 1	s. 2	s. 2
4	sw. 1	sw. 2	s. 1	s. 0	ne. 1	e. 1	sw. 2	nw. 1	nw. 2	nw. 1	nw. 2	w. 2	w. 2	w. 1
5	ne. 7	n. 3	ne. 10	ne. 11	ne. 12	e. 13	e. 16	e. 19	e. 10	se. 15	se. 8	se. 4	e. 5	e. 7
6	sw. 2	w. 1	w. 1	n. 2	ne. 1	n. 2	ne. 2	sw. 2	sw. 2	sw. 3	sw. 2	sw. 2	sw. 3	sw. 2
7	nw. 1	nw. 1	nw. 2	n. 1	ne. 2	ne. 1	n. 2	n. 1	n. 2	se. 2	se. 2	se. 2	se. 2	se. 2
8	sw. 1	sw. 2	s. 1	s. 1	sw. 2	ne. 2	s. 2	sw. 2	sw. 3	sw. 4	sw. 2	sw. 3	sw. 3	s. 3
9	s. 2	s. 3	sw. 2	nw. 3	nw. 2	s. 1	e. 2	n. 3	w. 1	n. 2	sw. 4	s. 2	sw. 4	sw. 3
10	sw. 5	nw. 2	nw. 3	s. 4	nw. 1	sw. 2	nw. 2	s. 2	ne. 2	sw. 7	e. 7	w. 6	sw. 4	nw. 4
11	w. 5	sw. 3	sw. 3	sw. 3	sw. 2	sw. 3	sw. 4	sw. 3	sw. 2	sw. 3	sw. 3	sw. 3	sw. 2	sw. 2
12	sw. 1	e. 1	nw. 2	0 0	nw. 1	sw. 2	w. 1	sw. 1	sw. 0	w. 3	nw. 1	e. 10	e. 16	e. 15
13	w. 3	w. 1	sw. 1	sw. 2	sw. 2	sw. 2	sw. 2	w. 5	w. 5	sw. 2	w. 2	sw. 1	sw. 3	sw. 2
14	w. 1	w. 1	w. 4	sw. 3	w. 2	nw. 2	w. 3	s. 2	e. 4	se. 3	s. 3	nw. 8	w. 3	w. 2
15	sw. 1	sw. 1	w. 1	sw. 2	w. 1	sw. 1	w. 1	sw. 3	se. 4	se. 14	se. 13	se. 14	se. 17	se. 16
16	e. 7	e. 13	e. 13	e. 15	e. 17	e. 13	e. 13	e. 11	s. 6	s. 3	s. 4	s. 3	s. 1	s. 2
17	sw. 3	e. 2	e. 9	e. 14	e. 16	e. 13	e. 9	e. 13	e. 11	e. 11	e. 10	e. 11	e. 13	e. 13
18	se. 3	e. 2	ne. 4	ne. 2	ne. 2	ne. 2	ne. 2	ne. 3	ne. 3	se. 4	se. 4	se. 3	se. 4	s. 5
19	w. 1	w. 2	s. 2	s. 2	sw. 4	sw. 3	sw. 1	sw. 2	sw. 2	sw. 2	sw. 5	sw. 8	s. 16	s. 4
20	s. 17	s. 18	s. 17	s. 24	s. 22	s. 22	s. 24	s. 19	s. 20	s. 18	s. 17	s. 17	s. 16	s. 14
21	se. 8	se. 14	se. 7	se. 7	s. 5	s. 6	s. 4	s. 7	s. 8	s. 8	s. 8	s. 10	s. 11	s. 11
22	se. 15	s. 8	s. 6	e. 7	se. 7	w. 6	se. 10	w. 12	s. 4	nw. 5	w. 3	w. 2	s. 3	sw. 2
23	se. 8	e. 7	e. 14	e. 8	w. 3	nw. 3	nw. 2	nw. 3	nw. 3	s. 2	e. 3	nw. 3	nw. 5	s. 4
24	se. 3	s. 2	s. 3	sw. 5	e. 4	se. 6	se. 6	sw. 4	sw. 2	sw. 2	sw. 2	sw. 2	sw. 3	sw. 2
25	w. 1	w. 2	w. 4	w. 2	w. 1	w. 3	s. 2	s. 2	s. 2	s. 3	s. 3	s. 3	s. 3	s. 2
26	s. 1	s. 1	s. 1	s. 2	s. 2	s. 2	s. 2	s. 2	s. 4	s. 3	s. 2	s. 2	s. 2	s. 2
27	sw. 2	sw. 2	sw. 2	s. 1	sw. 2	s. 2	sw. 2	sw. 1	sw. 3	sw. 3	sw. 2	sw. 1	sw. 3	sw. 3
28	**se. 28**	se. 20	se. 16	se. 19	se. 11	s. 8	s. 6	s. 3	s. 5	s. 5	s. 12	s. 10	se. 10	se. 15
29	s. 13	s. 14	s. 21	s. 11	s. 13	s. 15	sw. 13	se. 12	s. 15	s. 9	s. 12	s. 18	s. 20	se. 12
30	n. 2	ne. 2	s. 6	s. 9	s. 10	s. 13	s. 11	s. 14	s. 14	s 16	s. 18	s. 20	s. 19	se. 19
Means	5.1	4.2	5.4	5.4	5.0	5.1	5.0	5.2	4.7	5.3	5.3	5.8	6.3	5.8
Means in meters per second.	2.3	1.9	2.4	2.4	2.2	2.3	2.2	2.3	2.1	2.4	2.4	2.6	2.8	2.6

JUNE, 1882.

TABLE CXV.—*Direction and velocity of the wind, June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		Date.
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	
e. 1	e. 1	w. 2	w. 1	sw. 1	s. 2	s. 1	sw. 2	se. 2	nw. 4	1.4	0.6	1
s. 3	s. 3	s. 3	s. 2	s. 3	sw. 2	s. 1	w. 3	s. 1	sw. 2	2.3	1.0	2
s. 2	s. 1	sw. 2	w. 1	w. 2	w. 1	0 0	nw. 1	sw. 1	w. 1	1.3	0.6	3
w. 2	w. 4	ne. 12	ne. 10	ne. 18	e. 10	nw. 8	ne. 14	e. 7	n. 10	4.8	2.1	4
e. 4	e. 3	sw. 5	sw. 3	nw. 3	n. 2	n. 2	n. 2	sw. 2	n. 2	7.0	3.1	5
nw. 3	nw. 4	w. 3	n. 2	w. 2	nw. 3	nw. 3	nw. 2	nw. 2	nw. 1	2.2	1.0	6
se. 2	sw. 2	w. 1	s. 2	w. 2	s. 2	nw. 2	sw. 2	sw. 2	sw. 2	1.8	0.8	7
s. 3	s. 4	sw. 2	s. 2	sw. 4	nw. 2	nw. 3	n. 3	n. 3	s. 2	2.5	1.1	8
n. 3	sw. 2	nw. 2	nw. 4	sw. 4	n. 2	nw. 2	nw. 2	nw. 3	n. 6	2.7	1.2	9
nw. 2	sw. 2	w. 2	sw. 2	sw. 2	e. 6	se. 12	e. 11	ne. 7	nw. 3	4.2	1.9	10
sw. 3	sw. 2	sw. 2	s. 1	n. 2	n. 1	sw. 2	s. 1	s. 2	sw. 1	2.4	1.1	11
sw. 10	n. 4	sw. 3	e. 8	ne. 5	sw. 4	ne. 3	sw. 5	w. 2	sw. 2	4.2	1.9	12
w. 2	w. 2	w. 2	w. 2	w. 3	w. 1	w. 3	w. 1	w. 1	w. 1	2.1	0.9	13
sw. 3	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 1	sw. 1	sw. 1	sw. 1	2.4	1.1	14
se. 14	se. 10	se. 9	se. 14	se. 9	e. 11	e. 15	e. 15	e. 12	e. 12	8.8	3.9	15
s. 1	s. 2	s. 2	s. 3	sw. 3	sw. 1	w. 2	w. 2	sw. 3	w. 1	5.9	2.6	16
e. 16	e. 13	e. 13	e. 12	e. 12	e. 10	e. 12	e. 15	e. 10	e. 3	11.0	4.9	17
s. 3	s. 3	s. 5	s. 3	se. 4	sw. 2	sw. 2	sw. 3	sw. 3	w. 2	3.0	1.3	18
s. 7	s. 10	s. 11	s. 9	s. 8	s. 7	s. 9	s. 4	s. 7	s. 14	5.8	2.6	19
s. 13	s. 15	s. 14	s. 13	se. 11	sw. 6	s. 10	se. 11	se. 10	se. 11	**15.8**	**7.1**	20
s. 8	se. 12	se. 11	se. 13	s. 9	sw. 6	e. 2	se. 4	se. 11	se. 9	7.9	3.5	21
sw. 3	sw. 2	nw. 6	nw. 3	nw. 2	nw. 2	se. 2	se. 5	se. 6	e. 13	5.6	2.5	22
s. 3	e. 2	w. 3	sw. 2	se. 9	se. 13	s. 6	se. 4	se. 5	se. 7	5.1	2.3	23
s. 3	se. 12	s. 8	w. 5	w. 5	s. 5	w. 7	nw. 1	w. 2	w. 2	4.0	1.8	24
sw. 2	sw. 2	sw. 3	sw. 3	sw. 3	s. 3	s. 3	s. 1	s. 1	s. 3	2.4	1.1	25
s. 2	w. 3	sw. 2	s. 2	s. 3	w. 2	w. 2	sw. 2	w. 4	sw. 2	2.2	1.0	26
s. 2	s. 2	s. 3	s. 2	w. 3	s. 3	nw. 5	s. 8	s. 21	s. 13	3.8	1.7	27
se. 18	se. 15	se. 13	se. 17	se. 15	se. 16	s. 16	s. 17	s. 17	s. 19	13.8	6.2	28
s. 15	s. 12	s. 16	s. 17	s. 16	s. 16	s. 12	s. 11	s. 8	nw. 4	13.5	6.0	29
se. 20	se. 19	se. 17	se. 18	se. 16	se. 15	se. 8	se. 13	se. 15	se. 15	13.7	6.1	30
5.8	5.7	6.0	5.9	**6.8**	5.3	5.2	5.9	5.7	5.6	5.44	......	
2.6	2.5	2.7	2.6	**3.0**	2.4	2.3	2.6	2.5	2.5	2.4	2.4	

JULY, 1882.

Table CXVI.—*Direction and velocity of the wind, July, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	se. 18	se. 9	n. 4	s. 3	s. 5	se. 11	se. 11	se. 7	se. 5	sw. 3	nw. 3	nw. 2	w. 2	w. 1
2	nw. 2	sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	sw. 2	sw. 1	sw. 2	sw. 3	sw. 4	sw. 1	sw. 2	sw. 1
3	w. 2	w. 1	w. 1	w. 1	w. 3	w. 2	w. 2	w. 1	sw. 2	sw. 2	sw. 1	sw. 2	e. 11	e. 13
4	sw. 3	w. 2	w. 1	w. 2	sw. 1	sw. 3	s. 7	s. 5	s. 3	s. 2	s. 2	s. 4	s. 2	s. 3
5	sw. 2	w. 1	sw. 2	w. 2	w. 2	w. 2	w. 3	w. 3	sw. 3	sw. 3	sw. 3	sw. 2	sw. 2	sw. 1
6	w. 1	w. 2	sw. 1	sw. 2	sw. 2	sw. 1	s. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	n. 3	w. 4
7	s. 4	sw. 3	se. 9	sw. 13	sw. 6	sw. 3	w. 2	nw. 3	e. 13	s. 19	se. 19	se. 17	se. 16	s. 15
8	sw. 4	s. 6	s. 7	se. 11	se. 13	se. 12	se. 12	s. 16	s. 16	s. 16	s. 17	se. 19	sw. 12	s. 8
9	se. 13	se. 13	se. 12	w. 5	se. 4	w. 4	w. 2	sw. 3	s. 7	s. 5	s. 5	s. 4	s. 4	s. 4
10	sw. 3	sw. 2	sw. 3	sw. 1	sw. 2	sw. 3	se. 7	se. 9	s. 3	s. 2	w. 4	s. 5	e. 11	e. 18
11	s. 2	s. 2	s. 1	s. 1	s. 1	s. 3	se. 5	se. 2	e. 1	e. 2	e. 5	e. 4	s. 4	s. 2
12	w. 2	w. 3	w. 2	o o	w. 2	w. 2	w. 1	w. 1	w. 2	w. 3	w. 4	w. 2	w. 4	w. 2
13	e. 14	e. 15	e. 15	ne. 10	e. 9	se. 6	sw. 3	sw. 3	sw. 3	sw. 1	sw. 2	sw. 2	sw. 3	se. 6
14	e. 9	s. 7	se. 9	e. 11	s. 4	sw. 2	se. 1	w. 1	sw. 1	sw. 2	nw. 1	w. 2	w. 4	sw. 3
15	e. 8	se. 2	se. 7	se. 11	se. 13	se. 16	se. 14	s. 15	s. 6	s. 13	s. 16	se. 10	s. 5	s. 10
16	se. 14	se. 14	se. 13	se. 15	s. 14	se. 12	se. 11	se. 11	s. 10	s. 6	s. 5	s. 6	s. 3	nw. 3
17	se. 4	se. 2	se. 1	se. 2	se. 2	se. 2	se. 3	s. 2	s. 1	s. 2	s. 1	sw. 2	sw. 3	sw. 2
18	sw. 1	w. 2	w. 1	w. 2	sw. 2	sw. 1	s. 2	s. 3	s. 2	n. 4	s. 4	ne. 6	se. 9	s. 4
19	nw. 3	sw. 3	sw. 3	sw. 1	sw. 3	sw. 1	w. 3	w. 2	sw. 3	w. 3	w. 3	w. 3	s. 5	w. 4
20	w. 3	sw. 5	sw. 5	w. 6	w. 11	w. 11	w. 4	s. 2	ne. 14	e. 17	ne. 19	e. 15	w. 13	w. 9
21	sw. 3	sw. 2	sw. 3	sw. 4	sw. 2	sw. 2	sw. 2	sw. 3	sw. 2	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2
22	sw. 1	sw. 3	sw. 1	sw. 1	sw. 1	o o	sw. 2	sw. 1	sw. 2	sw. 1	w. 2	w. 2	sw. 2	sw. 2
23	sw. 1	sw. 2	sw. 3	sw. 3	sw. 2	sw. 5	sw. 3	sw. 3	sw. 2	sw. 1	sw. 2	s. 4	s. 1	s. 1
24	w. 2	s. 2	s. 3	s. 1	s. 1	sw. 3	w. 2	w. 2	sw. 3	sw. 2	sw. 1	sw. 2	sw. 3	sw. 2
25	sw. 3	sw. 1	sw. 2	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	w. 3	sw. 4
26	w. 3	nw. 3	n. 4	n. 2	s. 9	s. 12	s. 7	s. 4	w. 5	s. 11	s. 17	s. 7	s. 3	s. 5
27	w. 3	se. 4	nw. 8	se. 11	se. 12	se. 12	nw. 5	nw. 5	nw. 2	w. 4	sw. 3	sw. 2	sw. 4	s. 6
28	se. 15	s. 20	s. 17	s. 12	se. 20	se. 25	se. 33	se. 28	se. 27	se. 29	se. 25	se. 22	se. 19	se. 15
29	e. 4	se. 7	se. 10	sw. 10	e. 6	e. 12	s. 4	s. 2	s. 3	s. 2	s. 2	s. 4	s. 4	s. 2
30	e. 5	e. 6	e. 10	e. 9	e. 11	e. 7	sw. 3	sw. 5	sw. 3	sw. 3	sw. 2	sw. 2	sw. 4	sw. 3
31	w. 2	w. 1	w. 2	w. 1	w. 2	w. 2	w. 3	w. 2	nw. 3	se 3	sw. 2	sw. 3	w. 3	w. 4
Means	5.0	4.7	5.2	5.0	5.4	**5.8**	5.3	4.8	4.9	5.5	**5.8**	5.2	5.4	5.1
Means in meters per second	2.2	2.1	2.3	2.2	2.4	**2.6**	2.4	2.1	2.2	2.5	**2.6**	2.3	2.4	2.3

JULY, 1882.

TABLE CXVI.—*Direction and velocity of the wind, July, 1882.*

Washington mean time. Reduce to local mean time by adding 49[m]

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
w. 1	w. 1	w. 2	sw. 2	sw. 2	w. 2	w. 2	sw. 3	sw. 1	sw. 3	4.3	1.9	1
sw. 2	sw. 1	sw. 2	sw. 1	sw. 2	sw. 1	sw. 2	sw. 2	sw. 1	sw. 1	1.6	0.7	2
e. 5	e. 7	e. 9	e. 3	e. 5	w. 1	w. 2	sw. 2	sw. 2	sw. 2	3.4	1.5	3
s. 2	s. 2	s. 2	s. 3	sw. 2	sw. 3	sw. 2	sw. 2	sw. 2	sw. 1	2.5	1.1	4
sw. 2	sw. 3	sw. 2	sw. 3	sw. 2	sw. 2	sw. 2	sw. 2	sw. 3	sw. 2	2.2	1.0	5
w. 4	w. 4	w. 4	sw. 5	s. 10	nw. 10	nw. 8	se. 9	nw. 8	nw. 2	3.8	1.7	6
s. 16	se. 15	se. 20	se. 18	se. 18	s. 12	nw. 12	se. 5	se. 4	sw. 7	11.2	5.0	7
w. 6	se. 12	se. 18	se. 17	se. 10	e. 7	e. 10	e. 4	e. 7	se. 16	11.5	5.1	8
w. 6	w. 4	sw. 4	sw. 3	sw. 2	sw. 2	sw. 3	sw. 2	w. 2	w. 2	4.8	2.1	9
e. 16	e. 18	e. 10	e. 4	se. 13	s. 8	e. 5	sw. 2	sw. 3	sw. 3	6.5	2.9	10
s. 2	s. 3	sw. 2	sw. 3	sw. 2	sw. 2	se. 3	se. 11	s. 4	w. 4	3.0	1.3	11
w. 3	w. 5	w. 4	nw. 3	nw. 3	w. 2	w. 3	e. 7	e. 9	se. 10	3.3	1.5	12
se. 3	se. 8	sw. 8	s. 5	sw. 10	sw. 4	e. 7	e. 12	e. 11	e. 13	7.2	3.2	13
w. 4	w. 1	w. 1	w. 1	w. 1	w. 1	sw. 2	w. 2	w. 5	s. 4	3.3	1.5	14
s. 12	s. 9	s. 11	s. 13	s. 15	se. 15	se. 14	se. 14	se. 14	se. 16	11.6	5.2	15
nw. 3	nw. 2	nw. 2	sw. 2	sw. 3	s. 12	se. 6	w. 3	sw. 2	sw. 2	7.2	3.2	16
sw. 2	sw. 3	sw. 4	sw. 3	sw. 3	nw. 3	sw. 4	sw. 3	sw. 2	sw. 3	2.5	1.1	17
s. 10	e. 13	e. 14	sw. 3	e. 5	e. 9	ne. 11	e. 8	e. 11	sw. 3	5.4	2.4	18
e. 4	s. 2	sw. 3	w. 1	sw. 4	s. 6	s. 4	w. 3	w. 3	w. 5	3.1	1.4	19
s. 8	s. 5	sw. 6	sw. 5	sw. 3	sw. 9	w. 5	sw. 3	sw. 3	sw. 2	7.6	3.4	20
sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	1.7	0.8	21
sw. 2	sw. 2	sw. 1	sw. 1	sw. 2	sw. 1	sw. 1	sw. 1	sw. 1	sw. 2	1.5	0.7	22
s. 2	s. 2	s. 2	s. 1	s. 2	s. 1	s. 2	s. 2	s. 2	sw. 2	2.1	0.9	23
sw. 2	sw. 1	sw. 2	sw. 3	sw. 3	sw. 1	sw. 2	sw. 2	sw. 2	sw. 1	2.0	0.9	24
sw. 3	sw. 2	s. 2	s. 2	s. 2	n. 4	n. 2	s. 3	n. 3	nw. 4	2.4	1.1	25
s. 3	s. 4	s. 9	w. 6	s. 5	s. 9	s. 5	w. 3	w. 3	w. 2	5.9	2.6	26
s. 3	s. 2	s. 3	s. 3	s. 9	s. 14	s. 15	s. 9	s. 12	s. 12	6.8	3.0	27
se. 13	se. 17	se. 12	se. 15	se. 14	se. 14	se. 10	se. 4	e. 3	e. 6	**17.3**	**7.7**	28
s. 1	s. 2	s. 2	s. 2	s. 2	s. 1	s. 2	s. 2	s. 3	s. 2	3.8	1.7	29
nw. 2	w. 3	w. 1	w. 2	w. 1	w. 2	o o	w. 1	w. 1	w. 1	3.6	1.6	30
w. 2	nw. 5	nw. 3	nw. 2	ne. 2	ne. 2	ne. 1	sw. 2	sw. 1	sw. 2	2.3	1.0	31
4.7	5.1	5.4	4.4	5.1	5.2	4.8	4.2	4.2	4.4	5.02	....	
2.1	2.3	2.4	2.0	2.3	2.3	2.1	1.9	1.9	2.0	2.2	2.2	

AUGUST, 1882.

TABLE CXVII.—*Direction and velocity of the wind, August, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	sw. 1	sw. 2	sw. 3	sw. 1	sw. 2	sw. 2	sw. 2	ne. 2	se. 7	se. 4	nw. 4	nw. 3	nw. 3	nw. 2
2	s. 16	e. 18	se. 18	s. 12	se. 17	se. 17	se. 18	se. 14	s. 17	s. 17	s. 16	s. 16	se. 18	se. 14
3	e. 6	e. 7	e. 10	e. 10	e. 5	e. 2	e. 2	e. 2	ne. 2	ne. 2	ne. 1	ne. 2	ne. 2	ne. 2
4	e. 2	e. 2	e. 1	e. 1	e. 2	e. 1	ne. 1	ne. 2	ne. 1	ne. 2	ne. 2	ne. 2	ne. 1	ne. 2
5	e. 1	e. 3	ne. 1	ne. 3	s. 2	se. 3	s. 2	s. 3	s. 2	s. 1	s. 3	s. 3	sw. 3	sw. 2
6	se. 8	se. 15	se. 13	sw. 9	se. 8	se. 8	se. 16	se. 10	s. 5	nw. 5	s. 7	w. 3	s. 2	s. 3
7	s. 3	s. 2	s. 2	s. 2	s. 2	s. 2	s. 3	s. 6	s. 6	s. 4	s. 3	s. 3	s. 4	sw. 2
8	sw. 2	sw. 2	sw. 2	sw. 1	sw. 3	sw. 2	sw. 2	sw. 2	nw. 2	nw. 2	nw. 3	nw. 2	w. 2	w. 2
9	se. 5	se. 9	se. 11	se. 11	se. 9	se. 6	se. 6	se. 12	se. 12	s. 14	s. 13	s. 7	se. 2	e. 5
10	w. 8	w. 4	sw. 1	sw. 1	sw. 1	sw. 1	sw. 2	sw. 1	s. 5	s. 3	s. 1	s. 1	s. 1	s. 1
11	se. 1	se. 2	se. 1	se. 2	se. 2	se. 1	se. 2	se. 2	se. 2	se. 17	s. 12	s. 10	w. 10	w. 3
12	se. 5	se. 2	n. 2	n. 8	n. 2	se. 2	sw. 2	sw. 2	se. 9	s. 13	se. 12	se. 15	se. 10	s. 11
13	se. 5	s. 12	se. 12	s. 10	s. 12	se. 11	se. 15	se. 15	s. 15	s. 14	se. 13	se. 11	se. 11	s. 10
14	se. 14	se. 13	se. 15	se. 16	se. 18	se. 17	s. 16	s. 12	s. 12	se. 11	se. 10	se. 11	se. 11	se. 10
15	ne. 5	e. 3	nw. 4	nw. 4	nw. 2	nw. 1	w. 2	w. 2	n. 3	ne. 3	ne. 3	ne. 1	se. 2	ne. 2
16	nw. 3	s. 2	s. 1	s. 2	s. 1	s. 1	sw. 1	s. 3	sw. 1	sw. 2	sw. 2	s. 2	s. 2	s. 1
17	s. 1	s. 1	s. 2	s. 2	s. 1	s. 1	sw. 2	s. 1	0 0	w. 1	sw. 2	s. 1	s. 1	s. 2
18	se. 3	se. 4	se. 2	se. 3	se. 1	se. 2	se. 1	se. 2	se. 1	se. 1	se. 1	se. 1	se. 3	se. 3
19	s. 3	se. 6	s. 18	se. 16	se. 15	s. 9	se. 14	s. 13	se. 9	se. 11	se. 15	**s. 28**	s. 21	se. 8
20	se. 17	se. 14	se. 5	s. 13	se. 13	s. 15	se. 15	se. 15	se. 14	sc. 13	s. 15	s. 17	s. 13	s. 10
21	se. 13	s. 6	se. 10	w. 9	w. 2	s. 3	nw. 5	se. 10	n. 5	nw. 6	sw. 2	s. 6	sw. 7	w. 4
22	w. 2	w. 2	w. 2	w. 3	w. 1	w. 1	w. 1	s. 2	s. 1	s. 2	s. 2	s. 2	s. 1	s. 2
23	s. 1	s. 2	w. 2	nw. 2	w. 2	sw. 2	sw. 6	w. 4	e. 5	e. 3	se. 3	se. 2	se. 7	s. 3
24	w. 2	w. 2	sw. 2	0 0	s. 6	s. 10	se. 6	se. 10	se. 9	sw. 3	ne. 4	s. 3	e. 1	e. 2
25	se. 11	se. 11	se. 8	e. 4	e. 7	e. 6	se. 2	se. 2	se. 2	e. 2	e. 3	e. 2	e. 1	e. 1
26	n. 2	se. 2	se. 8	e. 6	e. 4	e. 3	e. 1	e. 1	n. 2	ne. 2	ne. 2	ne. 2	n. 3	sw. 3
27	nw. 2	0 0	nw. 1	e. 2	se. 3	se. 2	se. 2	w. 1	w. 1	w. 1	0 0	w. 1	0 0	w. 1
28	w. 3	sw. 2	0 0	sw. 1	nw. 1	se. 4	se. 2	se. 2	se. 1	se. 1	se. 2	se. 1	se. 2	se. 2
29	s. 1	s. 1	s. 1	s. 1	w. 2	w. 1	s. 6	s. 9	s. 7	se. 11	s. 12	s. 12	sw. 14	sw. 11
30	w. 3	w. 1	e. 2	se. 5	e. 7	se. 4	e. 5	se. 8	e. 5	e. 7	n. 2	w. 2	w. 3	sw. 3
31	e. 2	e. 2	ne. 1	ne. 1	se. 1	e. 1	e. 1	s. 2	se. 1	se. 3	se. 3	se. 4	se. 3	se. 3
Means	4.9	5.0	5.2	5.2	5.0	4.5	5.2	5.6	5.3	**5.8**	5.6	5.7	5.3	4.2
Means in meters per second	2.2	2.2	2.3	2.3	2.2	2.0	2.3	2.5	2.4	**2.6**	2.5	2.5	2.4	1.9

AUGUST, 1882.

TABLE CXVII.—*Direction and velocity of the wind, August*, 1882.

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		Date.
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	
w. 2	w. 2	s. 8	se. 15	sw. 14	s. 16	s. 14	s. 14	s. 13	s. 13	6.2	2.8	1
s. 16	se. 16	se. 13	e. 4	se. 7	se. 9	se. 8	se. 1	se. 7	se. 9	**13.2**	**5.9**	2
ne. 2	ne. 2	ne. 2	ne. 2	ne. 1	ne. 2	ne. 2	ne. 1	ne. 2	ne. 1	3.0	1.3	3
sw. 2	nw. 1	ne. 3	ne. 2	ne. 1	ne. 1	ne. 2	ne. 2	ne. 1	ne. 2	1.6	0.7	4
sw. 3	sw. 3	nw. 4	se. 6	se. 9	nw. 4	e. 4	e. 6	se. 7	w. 5	3.5	1.6	5
e. 5	e. 18	e. 18	e. 19	e. 19	e. 16	e. 14	e. 14	e. 13	se. 5	10.5	4.7	6
sw. 1	sw. 2	sw. 1	sw. 2	sw. 2	sw. 2	sw. 2	sw. 1	sw. 1	sw. 1	2.5	1.1	7
sw. 3	sw. 2	sw. 3	sw. 5	w. 2	w. 2	e. 2	s. 7	s. 8	se. 6	2.9	1.3	8
se. 6	se. 4	e. 9	e. 8	se. 2	e. 9	e. 15	e. 20	e. 18	e. 13	9.4	4.2	9
s. 1	0 0	s. 1	s. 1	s. 2	s. 1	s. 3	se. 3	se. 3	se. 2	2.0	0.9	10
w. 3	nw. 3	e. 4	e. 4	w. 7	sw. 2	sw. 2	sw. 3	ne. 5	ne. 5	4.4	2.0	11
se. 15	s. 12	se. 11	se. 12	nw. 7	nw. 2	nw. 2	nw. 4	se. 4	nw. 4	7.0	3.1	12
s. 14	s. 15	se. 15	s. 10	s. 7	se. 13	se. 17	w. 10	se. 7	se. 15	12.0	5.4	13
se. 5	se. 9	nw. 13	nw. 4	se. 9	se. 10	e. 6	s. 4	w. 4	e. 8	10.8	4.8	14
ne. 4	ne. 2	ne. 3	ne. 2	ne. 3	ne. 2	ne. 3	ne. 4	nw. 5	nw. 4	2.9	1.3	15
w. 2	w. 2	w. 1	sw. 1	sw. 2	nw. 1	s. 3	se. 1	s. 2	s. 2	1.7	0.8	16
sw. 2	sw. 3	s. 2	se. 3	se. 5	se. 3	s. 2	s. 2	sw. 4	sw. 2	1.9	0.8	17
se. 2	s. 2	s. 2	s. 1	s. 3	nw. 2	nw. 6	n. 7	n. 4	nw. 6	2.6	1.2	18
s. 9	se. 16	se. 18	e. 10	e. 8	se. 5	n. 5	e. 8	e. 6	se. 4	11.5	5.1	19
s. 11	s. 9	s. 9	se. 14	se. 12	se. 9	s. 9	s. 7	w. 9	se. 10	12.0	5.4	20
w. 5	nw. 3	nw. 2	nw. 4	nw. 2	nw. 3	nw. 2	nw. 2	w. 1	w. 1	4.7	2.1	21
s. 2	s. 2	s. 1	s. 1	s. 1	s. 2	s. 1	s. 3	s. 1	s. 1	1.6	0.7	22
e. 6	s. 4	sw. 3	sw. 2	e. 2	s. 7	s. 12	se. 10	se. 10	se. 10	4.6	2.1	23
w. 3	w. 5	w. 2	w. 2	e. 2	se. 5	se. 9	se. 10	se. 8	se. 7	4.7	2.1	24
e. 1	e. 1	e. 1	e. 2	se. 5	nw. 2	nw. 4	s. 2	s. 1	sw. 2	3.5	1.6	25
sw. 2	sw. 2	sw. 1	sw. 1	w. 2	w. 2	w. 1	w. 1	w. 2	nw. 1	2.3	1.0	26
0 0	w. 1	0 0	w. 1	0 0	w. 1	w. 2	sw. 2	0 0	nw. 1	1.0	0.4	27
sw. 2	sw. 4	w. 2	w. 1	nw. 1	nw. 2	s. 2	s. 1	s. 1	s. 1	1.7	0.8	28
sw. 10	sw. 5	sw. 1	s. 1	sw. 2	0 0	sw. 2	s. 3	w. 3	w. 2	4.9	2.2	29
sw. 5	sw. 3	sw. 2	ne. 3	s. 5	s. 2	s. 2	s. 1	s. 3	s. 2	3.5	1.6	30
se. 4	s. 4	s. 3	s. 3	s. 3	s. 3	s. 3	s. 2	s. 5	s. 2	2.5	1.1	31
4.8	5.1	5.1	4.7	4.7	4.5	5.2	5.0	5.1	4.7	5.05	....	
2.1	2.3	2.3	2.1	2.1	2.0	2.3	2.2	2.3	2.1	2.2	2.2	

SEPTEMBER, 1882.

TABLE CXVIII.—*Direction and velocity of the wind, September, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	s. 3	s. 4	s. 3	s. 2	s. 4	s. 2	s. 2	s. 4	s. 3	s. 3	s. 2	s. 2	n. 2	s. 2
2	sw. 3	o o	s. 1	sw. 1	sw. 1	sw. 1	o o	sw. 1	sw. 1	sw. 1	sw. 1	sw. 3	sw. 2	sw. 1
3	sw. 1	sw. 1	sw. 4	sw. 1	sw. 1	o o	sw. 1	sw. 1	sw. 1	sw. 1	se. 2	se. 2	s. 4	s. 3
4	o o	s. 1	s. 5	s. 3	nw. 4	nw. 2	nw. 1	nw. 1	nw. 1	nw. 2	o o	o o	o o	nw. 1
5	o o	o o	ne. 1	o o	ne. 1	o o	o o	ne. 1	o o	nw. 1	ne. 1	e. 8	e. 11	e. 11
6	ne. 16	ne. 15	ne. 14	ne. 15	ne. 22	ne. 17	n. 23	n. 23	n. 27	n. 30	n. 31	n. 26	n. 23	ne. 15
7	ne. 21	e. 16	ne. 17	ne. 16	ne. 18	ne. 18	ne. 18	nw. 10	w. 8	w. 11	w. 10	w. 7	sw. 6	e. 7
8	s. 3	s. 1	s. 3	se. 5	se. 4	se. 4	e. 5	e. 3	e. 2	e. 3	e. 3	e. 4	e. 2	e. 2
9	n. 5	w. 4	w. 4	w. 3	w. 2	n. 4	nw. 3	w. 2	w. 2	w. 1	w. 1	w. 2	nw. 1	w. 1
10	se. 3	ne. 3	ne. 3	ne. 1	ne. 1	ne. 1	n. 1	n. 1	ne. 2	ne. 1	n. 1	n. 1	n. 1	o o
11	s. 5	w. 6	sw. 3	s. 1	e. 2	e. 2	se. 4	ne. 2	n. 3	ne. 2	ne. 1	n. 1	o o	s. 3
12	ne. 3	ne. 3	ne. 3	ne. 1	ne. 2	ne. 4	ne. 3	ne. 2	ne. 5	ne. 3	o o	se. 3	se. 1	se. 1
13	se. 1	se. 1	se. 2	se. 1	o o	se. 1	se. 1	se. 1	se. 1	o o	o o	se. 1	se. 1	se. 1
14	s. 3	n. 8	n. 11	n. 13	n. 13	n. 13	n. 9	n. 9	ne. 8	n. 7	n. 10	n. 10	n. 13	n. 10
15	n. 3	ne. 4	ne. 4	n. 6	ne. 5	ne. 5	ne. 4	ne. 2	ne. 2	ne. 2	ne. 2	ne. 2	ne. 1	ne. 1
16	ne. 2	ne. 4	ne. 2	ne. 3	ne. 3	ne. 2	ne. 1	ne. 2	n. 2	ne. 1	ne. 2	ne. 1	e. 3	s. 4
17	ne. 1	ne. 2	ne. 2	ne. 2	ne. 1	ne. 2	ne. 3	ne. 1	ne. 1	ne. 1	ne. 1	ne. 2	ne. 1	ne. 1
18	ne. 1	ne. 4	ne. 3	ne. 5	ne. 3	ne. 5	o o	ne. 2	s. 1	s. 1	s. 1	s. 1	s. 1	s. 1
19	n. 17	n. 14	n. 12	n. 5	ne. 5	ne. 4	e. 4	e. 6	e. 6	ne. 3	e. 4	e. 2	e. 2	e. 5
20	s. 5	s. 4	s. 2	e. 6	e. 6	e. 5	ne 4	ne. 2	e. 5	ne. 4	ne. 2	ne. 2	ne. 2	ne. 3
21	ne. 2	ne. 5	ne. 3	n. 5	n. 2	n. 2	n. 1	n. 2	o o	n. 2	n. 1	n. 3	o o	o o
22	n. 3	n. 2	se. 7	se. 11	se. 11	se. 7	nw. 3	ne. 5	sw. 2	s. 5	sw. 5	w. 5	n. 17	w. 16
23	sw. 10	sw. 10	sw. 16	sw 22	sw. 22	sw. 18	sw. 15	sw. 14	sw. 17	sw. 17	sw. 11	sw. 7	o o	o o
24	s. 5	ne. 5	se. 5	ne. 4	ne. 3	ne. 8	se. 7	e. 9	e. 9	ne. 3	ne. 1	se. 3	n. 5	n. 6
25	e. 3	e. 7	e. 8	e. 8	e. 5	e. 7	e. 4	e. 8	e. 10	e. 8	e. 5	e. 8	e. 5	ne. 7
26	ne. 3	ne. 3	ne. 5	n. 3	n. 3	n. 2	n. 2	se. 1	ne. 2	e. 3	s. 3	s. 1	s. 1	s. 2
27	n. 4	nw. 2	se. 1	se. 3	sw. 1	sw. 2	s. 4	nw. 3	s. 5	s. 7	s. 9	n. 6	n. 3	s. 3
28	n. 4	n. 4	s. 4	se. 1	se. 3	se. 1	se. 3	se. 3	nw. 3	n. 3	n. 2	n. 3	e. 7	s. 7
29	se. 6	w. 3	w. 1	s. 1	nw. 3	nw. 4	e. 2	e. 2	nw. 1	nw. 1	n. 3	n. 1	n. 1	n. 1
30	o o	n. 1	ne. 1	e. 5	n. 3	n. 5	ne. 4	ne. 8	ne. 6	ne. 6	ne. 11	ne. 4	ne. 5	ne. 4
Means	4.5	4.6	5.0	5.1	5.1	4.9	4.4	4.4	4.5	4.4	4.2	4.0	4.0	4.0
Means in meters per second	2.0	2.1	2.2	2.3	2.3	2.2	2.0	2.0	2.0	2.0	1.9	1.8	1.8	1.8

SEPTEMBER, 1882.

TABLE CXVIII.—*Direction and velocity of the wind, September, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
s. 4	s. 2	s. 2	s. 2	sw. 4	sw. 4	sw. 2	sw. 1	sw. 1	sw. 3	2.6	1.2	1
sw. 3	sw. 2	sw. 1	sw. 1	sw. 1	o 0	o 0	sw. 1	o 0	o 0	1.1	0.5	2
s. 1	s. 1	o 0	s. 1	s. 1	s. 1	s. 3	s. 1	s. 3	s. 1	1.5	0.7	3
nw. 2	nw. 3	ne. 2	ne. 1	ne. 1	ne. 1	o 0	ne. 1	o 0	o 0	1.3	0.6	4
s. 2	s. 3	s. 1	ne. 3	sw. 2	sw. 3	sw. 2	s. 3	s. 2	ne. 8	2.7	1.2	5
n. 21	ne. 30	ne. 28	n. 23	ne. 25	n. 28	ne. 26	n. 18	n. 25	e. 22	**22.6**	**10.1**	6
e. 11	e. 13	e. 9	e. 4	nw. 4	e. 7	e. 8	e. 6	e. 5	e. 3	10.1	4.5	7
e. 2	sw. 3	sw. 4	sw. 5	sw. 8	w. 4	sw. 5	s. 5	sw. 4	w. 3	3.6	1.6	8
w. 2	w. 1	w. 1	w. 1	w. 3	w. 2	sw. 3	sw. 2	sw. 1	sw. 1	2.2	1.0	9
n. 1	n. 1	o 0	n. 1	n. 1	n. 1	s. 1	s. 3	w. 4	se. 8	1.7	0.8	10
s. 1	s. 1	nw. 8	nw. 1	nw. 4	n. 2	ne. 5	ne. 4	ne. 3	ne. 2	2.8	1.3	11
se. 1	se. 1	se. 2	se. 1	se. 1	se. 1	se. 1	s. 2	o 0	se. 2	1.9	0.8	12
se. 3	se. 2	se. 1	se. 1	se. 2	se. 2	o 0	se. 1	se. 1	ne. 1	1.1	0.5	13
n. 7	n. 6	ne. 8	ne. 6	ne. 6	e. 4	n. 6	ne. 6	ne. 6	ne. 5	8.2	3.7	14
se. 1	se. 2	ne. 2	e. 2	ne. 4	ne. 5	ne. 2	ne. 4	ne. 5	ne. 3	3.0	1.3	15
se. 3	s. 3	s. 2	s. 1	se. 2	se. 2	se. 2	se. 2	se. 2	se. 1	2.2	1.0	16
ne. 1	ne. 1	ne. 2	ne. 1	ne. 1	ne. 1	ne. 1	ne. 1	ne. 1	ne. 1	1.3	0.6	17
n. 5	n. 11	n. 12	n. 15	n. 17	nw. 15	nw. 13	n. 12	n. 16	n. 17	6.8	3.0	18
e. 3	e. 3	ne. 4	ne. 5	ne. 2	ne. 5	ne. 3	ne. 3	s. 2	e. 2	5.0	2.2	19
ne. 3	ne. 5	ne. 4	ne. 6	ne. 3	ne. 4	ne. 2	ne. 3	ne. 3	n. 1	3.6	1.6	20
o 0	o 0	o 0	o 0	o 0	n. 1	n. 2	n. 2	n. 2	n. 1	1.5	0.7	21
sw. 17	sw. 15	s. 12	sw. 8	sw. 13	sw. 13	sw. 17	sw. 17	s. 16	sw. 13	10.0	4.5	22
sw. 3	s. 3	w. 3	sw. 5	sw. 17	sw. 18	sw. 22	w. 14	sw. 5	s. 4	11.4	5.1	23
n. 5	n. 7	ne. 9	e. 9	n. 10	ne. 8	ne. 9	ne. 9	ne. 9	ne. 5	6.4	2.9	24
n. 10	n. 10	e. 11	e. 8	ne. 7	e. 6	e. 8	ne. 6	e. 2	e. 8	7.0	3.1	25
sw. 1	sw. 1	sw. 1	sw. 1	o 0	ne. 3	e. 6	e. 3	ne. 3	ne. 2	2.3	1.0	26
s. 11	s. 12	s. 8	s. 13	s. 12	s. 13	nw. 11	sw. 5	se. 14	se. 8	6.7	3.0	27
n. 3	s. 4	s. 3	sw. 1	s. 1	s. 2	s. 1	s. 3	w. 2	s. 5	3.0	1.3	28
n. 1	o 0	ne. 3	ne. 2	ne. 1	ne. 1	o 0	n. 2	n. 1	n. 2	1.8	0.8	29
nw. 2	nw. 1	nw. 3	o 0	sw. 1	o 0	o 0	sw. 1	e. 4	e. 21	4.0	1.8	30
4.3	4.9	4.9	4.3	5.1	5.2	**5.4**	4.7	4.7	5.1	4.66	....	
1.9	2.2	2.2	1.9	2.3	2.3	**2.4**	2.1	2.1	2.3	2.1	2.1	

OCTOBER, 1882.

TABLE CXIX.—*Direction and velocity of the wind, October, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	**e. 32**	**e. 32**	se. 27	ne. 20	ne. 21	n. 20	n. 19	n. 16	n. 15	n. 12	n. 11	n. 9	n. 9	nw. 5
2	ne. 2	nw. 7	n. 3	n. 2	n. 6	n. 6	n. 8	n. 14	n. 11	n. 16	ne. 16	n. 18	e. 11	s. 16
3	ne. 28	ne. 25	ne. 33	ne. 23	ne. 15	n. 22	ne. 20	ne. 22	ne. 22	ne. 19	ne. 22	ne. 22	ne. 18	ne. 14
4	ne. 5	ne. 7	n. 10	n. 12	n. 10	n. 6	ne. 15	n. 6	n. 8	n. 4	n. 2	n. 1	n. 1	ne. 7
5	n. 5	n. 3	n. 4	ne. 4	ne. 2	ne. 3	n. 1	n. 2	n. 1	0 0	n. 1	e. 1	e. 3	0 0
6	e. 1	e. 1	0 0	e. 1	e. 1	0 0	0 0	e. 1	0 0	ne. 1	ne. 1	0 0	0 0	n. 1
7	e. 1	e. 2	0 0	e. 1	0 0	e. 1	0 0	0 0	e. 1	e. 1	e. 1	0 0	se. 1	0 0
8	e. 2	e. 4	e. 3	e. 5	e. 5	e. 2	e. 3	e. 2	e. 3	e. 3	e. 4	0 0	e. 2	e. 1
9	0 0	e. 1	e. 1	e. 3	e. 2	e. 4	e. 6	e. 4	e. 3	e. 2	e. 1	e. 5	e. 2	e. 4
10	n. 5	n. 3	n. 2	0 0	n. 1	n. 1	n. 1	n. 2	n. 1	n. 2	n. 2	n. 2	n. 5	se. 3
11	e. 3	e. 3	e. 2	ne. 5	n. 5	n. 5	ne. 3	n. 3	e. 4	se. 3	0 0	0 0	e. 1	0 0
12	e. 2	e. 2	e. 4	e. 8	e. 6	e. 5	e. 1	e. 1	nw. 2	0 0	n. 7	ne. 2	e. 3	n. 3
13	0 0	0 0	0 0	0 0	ne. 3	ne. 3	ne. 5	ne. 3	e. 1	0 0	0 0	ne. 1	0 0	ne. 1
14	e. 3	e. 2	e. 6	ne. 4	ne. 2	ne. 1	ne. 1	ne. 1	0 0	ne. 2	ne. 1	0 0	ne. 2	ne. 1
15	n. 16	n. 15	n. 13	n. 9	n. 2	n. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
16	e. 1	0 0	e. 2	e. 2	e. 1	e. 3	e. 5	e. 6	e. 5	ne. 4	n. 2	ne. 1	n. 1	n. 3
17	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	se. 1	e. 1	0 0	e. 1	0 0	e. 1	0 0
18	0 0	se. 1	se. 3	se. 1	0 0	se. 1	se. 4	ne. 2	ne. 1	ne. 1	0 0	0 0	ne. 1	0 0
19	0 0	ne. 1	0 0	ne. 3	ne. 2	ne. 2	0 0	ne. 2	0 0	ne. 2	ne. 1	ne. 3	0 0	ne. 1
20	0 0	0 0	se. 1	0 0	0 0	0 0	0 0	0 0	se. 1	0 0	0 0	0 0	se. 1	0 0
21	e. 18	e. 21	e. 25	e. 21	nw. 24	nw. 10	sw. 5	sw. 9	sw. 4	s. 1	s. 1	nw. 2	sw. 2	0 0
22	0 0	0 0	nw. 1	0 0	0 0	0 0	0 0	nw. 1	nw. 5	nw. 7	nw. 2	nw. 1	0 0	0 0
23	sw. 1	sw. 2	0 0	s. 1	0 0	0 0	0 0	0 0	0 0	s. 1	0 0	0 0	sw. 1	0 0
24	n. 4	e. 2	0 0	e. 1	e. 1	n. 2	0 0	n. 1	e. 1	se. 1	0 0	se. 1	0 0	se. 1
25	0 0	s. 1	0 0	e. 1	0 0	se. 1	0 0	0 0	nw. 1	0 0	0 0	sw. 1	e. 1	0 0
26	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
27	0 0	0 0	0 0	e. 1	e. 2	e. 1	0 0	0 0	0 0	0 0	se. 1	0 0	0 0	0 0
28	e. 1	0 0	0 0	e. 2	0 0	e. 1	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0
29	n. 4	n. 5	n. 1	ne. 2	nw. 5	n. 2	e. 7	e. 4	0 0	0 0	0 0	0 0	e. 1	0 0
30	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0
31	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Means ...	4.3	**4.5**	**4.5**	4.3	3.8	3.3	3.4	3.4	2.9	2.7	2.5	2.3	2.2	2.0
Means in meters per second ...	1.9	**2.0**	**2.0**	1.9	1.7	1.5	1.5	1.5	1.3	1.2	1.1	1.0	1.0	0.9

OCTOBER, 1882.

TABLE CXIX.—*Direction and velocity of the wind, October, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^{h} 19^{m}$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		Date.
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	
n. 5	ne. 7	n. 8	n. 11	n. 12	n. 11	n. 14	n. 10	sw. 4	nw. 4	13.9	6.2	1
e. 15	e. 13	e. 8	e. 10	e. 9	n. 20	n. 19	n. 15	n. 14	n. 17	11.5	5.1	2
e. 5	w. 5	sw. 3	w. 5	ne. 5	ne. 5	ne. 3	ne. 3	ne. 3	ne. 6	**14.5**	**6.5**	3
n. 5	n. 7	ne. 3	n. 7	n. 6	n. 12	nw. 4	n. 5	n. 11	n. 11	6.9	3.1	4
se. 1	e. 1	0 0	e. 1	0 0	e. 1	0 0	0 0	e. 1	0 0	1.5	0.7	5
ne. 3	e. 4	ne. 1	ne. 2	n. 3	e. 5	e. 2	e. 3	e. 2	0 0	1.4	0.6	6
0 0	0 0	e. 1	0 0	0 0	e. 1	e. 1	e. 1	e. 1	e. 1	0.6	0.3	7
0 0	0 0	e. 1	0 0	0 0	0 0	0 0	e. 3	e. 3	e. 1	2.0	0.9	8
e. 3	ne. 5	ne. 4	n. 4	e. 4	e. 5	e. 3	e. 4	e. 2	e. 4	3.2	1.4	9
se. 1	se. 2	nw. 2	n. 1	e. 2	s. 2	s. 2	s. 4*	e. 3*	se. 3*	2.2	1.0	10
se. 1	0 0	0 0	se. 1	0 0	se. 3	ne. 1	ne. 2	ne. 5	ne. 7	2.4	1.1	11
ne. 2	ne. 4	e. 1	ne. 1	ne. 4	0 0	ne. 1	0 0	ne. 1	0 0	2.5	1.1	12
0 0	0 0	0 0	ne. 1	ne. 1	0 0	ne. 2	ne. 2	ne. 1	ne. 2	1.1	0.5	13
0 0	ne. 4	ne. 3	n. 7	n. 8	n. 13	n. 19	n. 17	nw. 16	nw. 16	5.4	2.4	14
e. 3	e. 6	e. 5	e. 4	e. 5	0 0	e. 1	e. 2	0 0	e. 2	3.5	1.6	15
0 0	n. 5	n. 3	n. 2	e. 1	e. 2	e. 2	0 0	0 0	0 0	2.1	0.9	16
0 0	e. 1	e. 1	e. 1	e. 1	e. 1	e. 1	e. 2	0 0	e. 1	0.6	0.3	17
ne. 1	0 0	0 0	0 0	ne. 1	0 0	0 0	0 0	0 0	0 0	0.7	0.3	18
ne. 2	ne. 1	0 0	0 0	ne. 1	0 0	0 0	0 0	n. 1	0 0	0.9	0.4	19
s. 1	se. 4	s. 3	0 0	w. 5	w. 6	w. 3	w. 1	n. 6	ne. 10	1.8	0.8	20
nw. 3	nw. 1	nw. 1	0 0	nw. 1	0 0	nw. 1	0 0	nw. 1	nw. 1	6.3	2.8	21
nw. 2	nw. 4	n. 3	ne. 2	s. 5	0 0	s. 1	0 0	nw. 5	nw. 2	1.7	0.8	22
0 0	0 0	0 0	0 0	se. 2	0 0	se. 1	0 0	s. 1	s. 1	0.5	0.2	23
se. 1	0 0	0 0	0 0	e. 1	0 0	e. 1	sw. 1	0 0	sw. 1	0.8	0.4	24
0 0	0 0	e. 1	0 0	e. 1	0 0	e. 1	0 0	e. 1	0 0	0.4	0.2	25
0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.1	0.0	26
0 0	0 0	0 0	e. 1	e. 2	e. 5	e. 5	e. 2	e. 2	0 0	0.9	0.4	27
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	n. 2	0.3	0.1	28
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	1.3	0.6	29
0 0	0 0	0 0	n. 1	0 0	0 0	e. 1	0 0	0 0	0 0	0.1	0.0	30
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	31
1.7	2.4	1.7	2.0	2.6	3.0	2.9	2.5	2.7	2.9	2.93	---------	
0.8	1.1	0.8	0.9	1.2	1.3	1.3	1.1	1.2	1.3	1.3	1.3	

* Interpolated from dial.

NOVEMBER, 1882.

TABLE CXX.—*Direction and velocity of the wind, November, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

Date.	1 a. m. Direction and velocity.	2 a. m. Direction and velocity.	3 a. m. Direction and velocity.	4 a. m. Direction and velocity.	5 a. m. Direction and velocity.	6 a. m. Direction and velocity.	7 a. m. Direction and velocity.	8 a. m. Direction and velocity.	9 a. m. Direction and velocity.	10 a. m. Direction and velocity.	11 a. m. Direction and velocity.	Noon. Direction and velocity.	1 p. m. Direction and velocity.	2 p. m. Direction and velocity.
1	o o	n. 1	o o	o o	nw. 1	o o	o o	o o	s. 1	s. 1	e. 1	e. 8	e. 6	e. 6
2	o o	e. 4	o o	e. 1	e. 2	o o	o o	o o	o o	w. 1	o o	e. [illegible]	o o	o o
3	o o	o o	o o	o o	se. 1	o o	o o	o o	s. 1	o o	o o	o o	o o	o o
4	o o	s. 1	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	s. 1	o o
5	se. 1	se. 2	se. 2	se. 2	se. 4	se. 1	se. 1	o o	e. 2	o o	e. 1	e. 1	e. 1	o o
6	e. 1	e. 1	e. 3	e. 1	o o	e. 2	e. 2	e. 4	ne. 1	ne. 1	o o	n. 1	n. 1	n. 2
7	ne. 2	o o	ne. 1	o o	e. 2	ne. 1	ne. 1	ne. 1	o o	ne. 2	ne. 3	e. 6	e. 1	e. 1
8	o o	e. 5	e. 3	e. 5	e. 3	e. 4	e. 3	e. 2	e. 2	o o	e. 1	e. 1	e. 5	e. 6
9	ne. 1	ne. 1	e. 1	e. 1	e. 3	e. 3	e. 1	e. 1[a]	e. 1[a]	e. 1[a]	e. 2[a]	e. 1	e. 1	e. 1
10	o o	o o	o o	o o	se. 1	o o	e. 1	o o	o o	o o	e. 1	o o	o o	e. 1
11	o o	e. 1	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o
12	o o	o o	o o	o o	o o	o o	o o	e. 1	se. 1	o o	o o	o o	o o	o o
13	o o	n. 1	ne. 1	s. 2	ne. 2	e. 3	ne. 2	ne. 6	se. 3	e. 5	e. 4	se. 4	sw. 3	se. 2
14	o o	s. 1	s. 1	o o	s. 1	s. 2	s. 2	se. 1	se. 1	e. 1	e. 1	e. 1	o o	e. 1
15	se. 1	se. 1	se. 1	se. 1	e. 1	ne. 1	e. 2	ne. 2	ne. 1	e. 3	e. 3	ne. 3	s. 14	**se. 22**
16	ne. 8	n. 11	n. 16	n. 14	n. 13	n. 11	n. 13	n. 11	se. 8	se. 2	e. 4	e. 5	ne. 10	ne. 3
17	o 1[b]	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1
18	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o
19	o o	o o	o o	o o	o o	o o	e. 1	o o	o o	o o	o o	o o	o o	o o
20	o o	o o	e. 1	e. 1	e. 2	e. 1	sw. 3	n. 2	o o	e. 2	e. 1	e. 1	e. 1	e. 2
21	e. 1	o o	o o	se. 1	o o	o o	o o	o o	e. 1	se. 1	o o	se. 1	e. 1	e. 3
22	o o	o o	e. 1	o o	o o	o o	o o	o o	e. 1	o o	o o	o o	o o	o o
23	o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	e. 1	o o	o o	o o
24	o o	o o	o o	o o	se. 1	o o	o o	o o	o o	o o	o o	o o	o o	o o
25	o o	o o	o o	o o	o o	o o	o o	o o	e. 1	s. 1	o o	s. 1	o o	o o
26	o o	o o	o o	o o	o o	o o	o o	se. 1	o o	o o	o o	e. 1	o o	o o
27	se. 1	o o	se. 1	se. 1	ne. 1	se. 3	se. 1	se. 1	o o	o o	e. 1	o o	o o	o o
28	o o	o o	e. 1	o o	se. 1	o o	o o	o o	o o	o o	o o	o o	o o	o o
29	ne. 1	o o	se. 1	e. 1	o o	n. 1	ne. 1	o o	o o	o o	o o	o o	o o	e. 1
30	o o	o o	se. 1	o o	se. 1	o o	e. 2	o o	e. 2	o o	o o	o o	o o	o o
Means	0.3	1.0	1.3	1.1	1.4	1.1	1.2	1.1	0.9	0.7	0.8	1.2	1.5	**1.7**
Means in meters per second	0.1	0.4	0.6	0.5	0.6	0.5	0.5	0.5	0.4	0.3	0.4	0.5	0.7	**0.8**

[a] Interpolated from dial.

[b] Interpolated from dial reading of 18th.

NOVEMBER, 1882.

TABLE CXX.—*Direction and velocity of the wind, November, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' \quad -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
n. 2	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	1.1	0.5	1
o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.4	0.2	2
o 0	o 0	o 0	o 0	o 0	o 0	se. 1	o 0	o 0	s. 2	0.2	0.0	3
s. 3	s. 3	s. 1	s. 2	s. 2	s. 1	s. 3	s. 1	se. 2	e. 3	1.0	0.4	4
e. 1	o 0	o 0	o 0	e. 1	o 0	e. 1	e. 4	e. 1	e. 1	1.1	0.5	5
o 0	n. 1	o 0	n. 1	n. 1	n. 1	n. 1	ne. 4	ne. 2	ne. 1	1.3	0.6	6
e. 5	e. 4	ne. 3	ne. 7	e. 5	e. 6	ne. 4	ne. 8	ne. 1	o 0	2.7	1.2	7
e. 2	e. 2	ne. 3	ne. 1	e. 6	e. 5	ne. 5	ne. 5	ne. 8	ne. 6	3.5	1.6	8
o 0	o 0	o 0	o 0	e. 1	o 0	o 0	o 0	o 0	o 0	0.8	0.4	9
e. 1	e. 2	se. 2	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.4	0.2	10
o 0	o 0	o 0	se. 1	o 0	se. 1	se. 1	o 0	o 0	o 0	0.2	0.0	11
o 0	o 0	o 0	se. 1	se. 1	o 0	o 0	o 0	o 0	e. 1	0.2	0.0	12
e. 1	e. 2	e. 1	o 0	e. 1	o 0	e. 1	s. 1	o 0	s. 1	1.9	0.8	13
e. 1	s. 1	s. 1	s. 1	e. 3	e. 2	e. 2	se. 1	se. 1	e. 2	1.2	0.5	14
se. 7	s 3	se. 3	se. 5	e. 2	e. 3	se. 4	e. 2	n. 6	n. 13	4.3	1.9	15
n. 1	n. 4	n. 1	e. 2	e. 3	e. 1	e. 1	e. 3	e. 1	o 0	**6.1**	**2.7**	16
o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	o 1	1.0	0.4	17
o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.0	0.0	18
o 0	e. 1	e. 1	o 0	e. 1	e. 1	o 0	o 0	o 0	n. 1	0.2	0.0	19
e. 1	e. 3	o 0	e. 1	o 0	o 0	e. 1	e. 1	o 0	o 0	1.0	0.4	20
o 0	o 0	e. 1	o 0	o 0	e. 1	o 0	o 0	e. 1	o 0	0.5	0.2	21
o 0	o 0	o 0	o 0	o 0	e. 1	o 0	o 0	o 0	o 0	0.1	0.0	22
o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.0	0.0	23
o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.0	0.0	24
o 0	o 0	o 0	s. 1	o 0	o 0	s. 1	o 0	o 0	o 0	0.2	0.0	25
o 0	e. 1	o 0	s. 1	o 0	o 0	o 0	e. 1	s. 2	o 0	0.3	0.1	26
o 0	o 0	o 0	o 0	e. 1	e. 1	se. 1	o 0	o 0	o 0	0.5	0.2	27
o 0	o 0	o 0	o 0	e. 1	o 0	o 0	o 0	o 0	o 0	0.1	0.0	28
o 0	o 0	se. 1	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.3	0.1	29
o 0	o 0	e. 1	o 0	o 0	o 0	o 0	o 0	o 0	o 0	0.3	0.1	30
0.9	0.9	0.7	0.8	1.0	0.8	0.9	1.1	0.9	1.1	1.03	.....	
0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.4	

DECEMBER, 1882.

TABLE CXXI.—*Direction and velocity of the wind, December, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0
2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0
3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0	e. 3	0 0	0 0	0 0
4	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0
5	0 0	0 0	0 0	ne. 1	0 0	ne. 1	0 0	0 0	se. 1	0 0	0 0	0 0	se. 3	0 0
6	ne. 2	ne. 1	ne. 2	ne. 3	ne. 1	e. 4	e. 1	e. 3	e. 1	0 0	0 0	0 0	0 0	0 0
7	e. 3	0 0	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0	0 0	0 0	0 0	e. 1	0 0
8	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	s. 1	sw. 1	sw. 3	se. 1	sw. 4
9	0 0	e. 1	0 0	0 0	e. 1	0 0	e. 1	e. 1	ne. 1	sw. 1	sw. 1	se. 2	nw. 2	0 0
10	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 2	0 0	ne. 1	ne. 1	0 0	ne. 1
11	e. 1	n. 2	n. 1	n. 1	n. 1	0 0	0 0	se. 1	0 0	se. 1	0 0	se. 2	0 0	e. 2
12	0 0	n. 2	0 0	0 0	e. 1	n. 2	ne. 1	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0
13	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1
14	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	s. 1	ne. 1	nw. 2
15	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1
16	0 0	0 0	0 0	e. 1	0 0	0 0	e. 2	0 0	0 0	e. 1	0 0	0 0	0 0	0 0
17	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1
18	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 2	e. 1	e. 1
19	0 0	0 0	0 0	0 0	0 0	0 0	0 0	se. 1	0 0	se. 1	se. 1	0 0	ne. 1	0 0
20	ne. 1	0 0	0 0	w. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
21	ne. 1	0 0	0 0	ne. 1	e. 1	e. 3	n. 2	e. 1	ne. 3	0 0	nw. 1	nw. 1	nw. 1	sw. 1
22	0 0	s. 1	se. 2	0 0	0 0	se. 1	se. 1	0 0	0 0	se. 1	ne. 2	0 0	0 0	0 0
23	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	e. 1	0 0
24	0 0	e. 1	e. 1	e. 1	0 0	ne. 1	0 0	0 0	0 1	nw. 1	0 0	s. 1	sw. 1	0 0
25	sw. 5	n. 2	nw. 8	s. 5	n. 5	se. 3	s. 14	n. 10	nw. 10	w. 2	se. 1	e. 1	sw. 2	se. 1
26	se. 3	se. 1	se. 1	0 0	0 0	0 0	0 0	se. 1	e. 1	ne. 2	ne. 8[a]	ne. 7[a]	ne. 1	se. 4
27	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	e. 1
28	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	ne. 1	0 0
29	0 0	0 0	0 0	e. 2	0 0	e. 1	e. 1	0 0	se. 6	e. 7	se. 16	se. 8	se. 3	se. 3
30	0 0	0 0	0 0	e. 1	0 0	e. 1	e. 1	ne. 1	0 0	se. 2	se. 1	ne. 5	e. 16	e. 16
31	n. 1	ne. 1	ne. 4	ne. 5	ne. 2	ne. 5	0 0	ne. 1	ne. 1	0 0	0 0	0 0	0 0	0 0
Means	0.6	0.4	0.6	0.7	0.6	0.7	0.8	0.7	0.9	0.7	1.2	1.1	1.2	1.3
Means in meters per second	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.	0.3	0.5	0.5	0.5	0.6

[a] Interpolated from dial.

DECEMBER, 1882.

TABLE CXXI.—*Direction and velocity of the wind, December, 1882.*

Washingto mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
e. 1	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	ne. 1	0 0	0.2	0.0	1
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	2
0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0.2	0.0	3
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.1	0.0	4
e. 1	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	e. 1	ne. [illegible]	0.5	0.2	5
0 0	0 0	0 0	e. 1	0 0	e. 1	0 0	e. 2	0 0	e. 1	1.0	0.4	6
0 0	e. 2	0 0	0 0	s. 1	s. 1	s. 1	0 0	s. 1	0 0	0.5	0.2	7
ne. 3	nw. 2	0 0	0 0	se. 1	0 0	0 0	se. 1	e. 1	e. 1	0.8	0.4	8
0 0	0 0	0 0	0 0	e. 2	0 0	0 0	e. 1	0 0	0 0	0.6	0.3	9
ne. 1	ne. 2	ne. 1	0 0	e. 1	e. 2	e. 1	0 0	0 0	0 0	0.5	0.2	10
e. 2	0 0	e. 1	e. 1	0 0	ne. 2	0 0	ne. 3	e. 2	0 0	1.0	0.4	11
0 0	ne. 1	0 0	0 0	0 0	sw. 1	0 0	0 0	0 0	0 0	0.4	0.2	12
ne. 1	0 0	ne. 1	0 0	se. 1	ne. 1	ne. 2	e. 1	0 0	0 0	0.4	0.2	13
se. 1	0 0	e. 1	0 0	e. 1	0 0	e. 1	0 0	e. 1	0 0	0.4	0.2	14
0 0	0 0	0 0	0 0	0 0	0 0	ne. 2	0 0	0 0	ne. 1	0.2	0.0	15
e. 2	0 0	0 0	0 0	0 0	c 0	0 0	0 0	0 0	0 0	0.2	0.0	16
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.1	0.0	17
0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.2	0.0	18
0 0	0 0	0 0	ne. 1	0 0	0 0	e. 1	0 0	n. 1	0 0	0.3	0.1	19
0 0	w. 1	0 0	0 0	0 0	0 0	0 0	e. 1	ne. 2	e. 1	0.3	0.1	20
sw. 1	sw. 1	0 0	sw. 1	0 0	s. 1	0 0	sw. 1	0 0	0 0	0.9	0.4	21
0 0	0 0	0 0	0 0	0 0	0 0	0 0	n. 1	0 0	0 0	0.4	0.2	22
e. 2	0 0	se. 1	se. 1	0 0	nw. 2	nw. 1	se. 1	0 0	nw. 1	0.5	0.2	23
e. 2	0 0	w. 1	w. 1	0 0	sw. 2	w. 1	s. 2	s. 4	n. 15	1.5	0.7	24
se. 5	s. 9	se. 5	n. 1	n. 1	0 0	s. 5	s. 8	s. 5	s. 6	4.8	2.1	25
se. 2	se. 1	se. 1	se. 2	se. 4	se. 1	se. 1	se. 1	0 0	se. 1	1.8	0.8	26
e. 1	0 0	0 0	e. 1	0 0	0 0	0 0	e. 1	0 0	e. 1	0.3	0.1	27
0 0	e. 1	0 0	0 0	0 0	e. 1	0 0	e. 1	0 0	e. 1	0.3	0.1	28
ne. 2	ne. 2	0 0	e. 3	e.	ne. 3	0 0	se. 1	0 0	0 0	2.5	1.1	29
ne. 11	ne. 14	*ne.* **20**[a]	ne. *19*[a]	ne. *18*[a]	n. *12*[a]	n. *3*[a]	n. *3*[a]	n. 1	0 0	**6.0**	**2.7**	30
0 0	ne. 1	ne. 2	0 0	se. 2	se. 1	0 0	ne. 1	0 0	0 0	1.1	0.5	31
1.2	1.2	1.1	1.0	1.1	1.0	0.6	1.0	0.6	1.0	0.90	--------	
0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.4	0.3	0.4	0.4	0.4	

[a] Interpolated from dial.

JANUARY, 1883.

TABLE CXXII.—*Direction and velocity of the wind, January, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a.m. Direction and velocity.	2 a.m. Direction and velocity.	3 a.m. Direction and velocity.	4 a.m. Direction and velocity.	5 a.m. Direction and velocity.	6 a.m. Direction and velocity.	7 a.m. Direction and velocity.	8 a.m. Direction and velocity.	9 a.m. Direction and velocity.	10 a.m. Direction and velocity.	11 a.m. Direction and velocity.	Noon. Direction and velocity.	1 p.m. Direction and velocity.	2 p.m. Direction and velocity.
1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0	0 0
2	0 0	0 0	0 0	0 0	0 0	ne. 2	ne. 3	ne. 1	0 0	0 0	e. 1	0 0	0 0	0 0
3	e. 1	0 1	0 1	0 1	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
4	e. 1	e. 1	e. 1	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0
5	0 0	se. 1	0 0	0 0	se. 1	0 0	se. 1	se. 1	se. 1	se. 1	e. 2	0 0	0 0	e. 3
6	....	s. 1	s. 2	s. 1	0 0	0 0	s. 1	0 0	0 0	0 0	0 0	0 0	se. 1	0 0
7	se. 1	se. 2	se. 2	se. 1	0 0	se. 1	0 0	se. 1	se. 1	se. 1	0 0	ne. 1	ne. 3	n. 1
8	se. 1	0 0	0 0	0 0	0 0	se. 2	0 0	se. 1	ne. 2	n. 1	ne. 1	0 0	se. 1	ne. 3
9	0 0	0 0	0 0	ne. 1	0 0	w. 1	0 0	0 0	e. 2	0 0	0 0	0 0	e. 1	0 0
10	0 0	e. 1	0 0	0 0	e. 2	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0
11	0 0	ne. 1	0 0	ne. 1	e. 1	0 0	0 0	0 0	e. 1	e. 1	0 0	0 0	e. 1	0 0
12	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
13	0 0	0 0	0 0	0 0	e. 2	ne. 1	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0
14	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
15	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
16	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
17	0 0	0 0	ne. 1	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0	0 0	0 0	0 0	se. 1
18	0 0	s. 3	s. 1	s. 1	0 0	se. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
19	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
20	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
21	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0
22	0 0	0 0	ne. 2	0 0	0 0	ne. 1	0 0	0 0	sw. 1	0 0	e. 2	e. 3	e. 1	0 0
23	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0	e. 1	e. 1	0 0	0 0
24	0 1	0 1	0 1	e. 1	0 1	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
25	0 0	0 0	0 0	0 0	ne. 3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1
26	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	ne. 2	ne. 3	0 0	0 0	0 0
27	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 2	e. 8	e. 7	e. 5	e. 2
28	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
29	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 2	0 0	0 0	0 0	0 0	0 0	0 0
30	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
31	0 0	0 0	e. 1	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Means ...	0.2	0.4	0.4	0.3	0.4	0.4	0.2	0.3	0.3	0.3	0.6	0.4	0.4	0.4
Means in meters per second.	0.0	0.2	0.2	0.1	0.2	0.2	0.0	0.1	0.1	0.1	0.3	0.2	0.2	0.2

JANUARY, 1883.

TABLE CXXII.—*Direction and velocity of the wind, January, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
nw. 1	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0.1	0.0	1
se. 1	0 0	e. 1	e. 1	e. 2	e. 2	e. 2	e. 1	0 0	0 0	0.7	0.3	2
0 0	se. 1	se. 1	0 0	e. 2	e. 2	e. 3	ne. 2	0 0	e. 1	0.7	0.3	3
e. 1	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0.3	0.1	4
ne. 4	ne. 4	ne. 1	ne. 1	0 0	0 0	0 0	e. 1	e. 1	0 0	1.0	0.4	5
e. 1	0 0	e. 2	0 0	ne. 3	se. 1	0 0	0 0	e. 1	e. 1	0.6	0.3	6
0 0	se. 2	0 0	0 0	nw. 1	0 0	0 0	0 0	0 0	0 0	0.8	0.4	7
ne. 1	n. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.6	0.3	8
0 0	se. 2	0 0	0 0	ne. 1	0 0	0 0	ne. 1	ne. 1	0 0	0.4	0.2	9
0 0	0 0	e. 1	0 0	0 0	0 0	0 0	ne. 1	e. 1	0 0	0.3	0.1	10
e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0.3	0.1	11
e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0.1	0.0	12
e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.2	0.0	13
0 0	e. 1	e. 1	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0.2	0.0	14
0 0	0 0	0 0	0 0	e. 1	e. 1	e. 1	0 0	e. 1	0 0	0.2	0.0	15
e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	16
0 0	0 0	0 0	s. 3	s. 3	0 0	se. 3	s. 2	s. 1	s. 1	0.7	0.3	17
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.2	0.0	18
0 0	0 0	0 0	0 0	ne. 1	e. 1	0 0	0 0	ne. 1	0 0	0.2	0.0	19
0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	20
0 0	e. 1	ne. 1	ne. 3	ne. 1	ne. 1	0 0	ne. 1	ne. 1	0 0	0.4	0.2	21
0 0	e. 1	0 0	0 0	0 0	0 0	e. 1	e. 1	0 0	0 0	0.5	0.2	22
e. 4	e. 3	e. 2	ne. 1	ne. 3	0 1	0 1	0 1	0 1	0 1	0.9	0.4	23
ne. 1	0 0	0 0	0 0	se. 3	0 0	ne. 1	0 0	0 0	0 0	0.5	0.2	24
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.2	0.0	25
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.2	0.0	26
e. 3	ne. 8	ne. 2	e. 1	0 0	0 0	0 0	e. 1	0 0	0 0	1.6	0.7	27
0 0	0 0	0 0	0 0	0 0	0 0	0 0	w. 1	0 0	0 0	0.0	0.0	28
e. 1	0 0	ne. 5	e. 7	e. 6	ne. 5	0 0	0 0	0 0	0 0	1.1	0.5	29
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.0	0.0	30
0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0.1	0.0	31
0.7	0.8	0.6	0.6	0.9	0.5	0.4	0.5	0.3	0.1	0.43	---------	
0.3	0.4	0.3	0.3	0.4	0.2	0.2	0.2	0.1	0.0	0.2	0.2	

FEBRUARY, 1883.

TABLE CXXIII.—*Direction and velocity of the wind, August, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
2	ne. 1	ne. 4	0 0	e. 1	0 0	0 0	e. 2	e. 1	0 0	0 0	0 0	0 0	e. 1	0 0
3	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0
4	0 0	se. 3	nw. 3	sw. 1	0 0	sw. 1	0 0	sw. 1	0 0	0 0	se. 3	0 0	0 0	0 0
5	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
6	e. 1	e. 1	0 0	0 0	0 0	0 0	ne. 2	ne. 1	0 0	0 0	0 0	0 0	0 0	0 0
7	se. 4	se. 1	n. 7	ne. 1	ne. 3	0 0	0 0	nw. 4	0 0	0 1	0 0	0 0	e. 1	0 0
8	ne. 1	0 0	0 0	ne. 1	0 0	0 0	0 0	0 0	0 0	se. 1	se. 1	se. 1	ne. 1	0 0
9	0 0	0 0	e. 1	0 0	e. 1	e. 1	e. 1	e. 1	0 0	ne. 2	se. 1	0 0	0 0	se. 1
10	0 0	0 0	ne. 1	se. 1	ne. 1	0 0	ne. 1	0 0	0 1[a]	ne. 1	0 1[a]	0 1[a]	e. 2[a]	0 1
11	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 0	0 0	0 0	w. 1	0 0
12	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0
13	e. 1	0 0	e. 1	nw. 1	0 0	ne. 1	0 0	0 0	ne. 1	e. 1	0 0	e. 2	e. 2	se. 3
14	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0	ne. 1	e. 1	se. 1	se. 2
15	0 0	ne. 1	e. 1	e. 1	0 0	0 0	0 0	e. 1	0 0	0 0	e. 1	0 0	0 0	nw. 1
16	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	ne. 1	0 0	0 0	0 0	0 0	0 0
17	0 0	0 0	0 0	e. 1	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0
18	e. 1	0 0	e. 1	e. 1	0 0	0 0	ne. 1	e. 1	0 0	ne. 1	0 0	0 0	0 0	0 0
19	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
20	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1
21	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	se. 2	0 0
22	e. 2	sw. 4	se. 3	se. 1	e. 2	sw. 3	e. 1	e. 1	0 0	se. 1	se. 1	0 0	se. 2	0 0
23	ne. 1	ne. 1	se. 1	0 0	se. 1	e. 1	se. 1	e. 1	se. 1	0 0	0 0	0 0	se. 1	0 0
24	0 0	se. 1	0 0	0 0	0 0	e. 1	nw. 2	0 0	ne 2	0 0	0 0	0 0	ne. 1	0 0
25	ne. 1	0 0	ne. 1	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0
26	ne. 1	ne. 1	0 0	0 0	0 0	0 0	ne. 3	sw. 1	0 0	ne. 1	ne. 1	ne. 1	0 0	0 0
27	0 0	0 0	e. 1	0 0	0 0	0 0	ne. 2	nw. 1	0 0	0 0	0 0	ne. 1	0 0	0 0
28	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	e. 1
Means	0.6	0.7	0.7	0.4	0.3	0.4	0.6	0.6	0.3	0.3	0.4	0.3	0.6	0.4
Means in meters per second	0.3	0.3	0.3	0.2	0.1	0.2	0.3	0.3	0.1	0.1	0.2	0.1	0.3	0.2

[a] Interpolated from dial.

FEBRUARY, 1883.

TABLE CXXIII.—*Direction and veloctiy of the wind, August*, 1883.

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81^{\circ}\ 44'$ $\lambda = -64^{\circ}\ 45' = -4^{h}\ 19^{m}$

[Velocity, miles per hour.]

3 p. m.		4 p. m.		5 p. m.		6 p. m.		7 p. m.		8 p. m.		9 p. m.		10 p. m.		11 p. m.		Midnight.		Mean daily velocity.		
Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Direction and velocity.		Miles per per hour.	Meters per second.	Date.
0	0	0	0	e.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	1
0	0	e.	1	e.	1	0	0	0	0	ne.	1	ne.	1	0	0	ne.	1	0	0	0.6	0.3	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	3
0	0	e.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0.2	4
0	0	0	0	0	0	s.	1	ne.	1	0	0	0	0	ne.	1	0	0	s.	3	0.3	0.1	5
0	0	0	0	0	0	0	0	0	0	se.	1	0	0	0	0	0	0	se.	1	0.3	0.1	6
0	0	0	0	0	0	0	0	0	0	0	0	se.	1	0	0	e.	1	0	0	1.0	0.4	7
0	0	0	0	0	0	0	0	e.	1	0	0	0	0	0	0	0	0	0	0	0.3	0.1	8
se.	2	0	0	0	0	e.	1	e.	1	e.	1	ne.	1	ne.	1	0	0	ne.	1	0.7	0.3	9
0	1[a]	ne.	4[a]	e.	1	0	0	0	0	e.	1	0	0	e.	1	e	1	e.	1	0.9	0.4	10
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	11
0	0	0	0	0	0	e.	2	ne.	1	0	0	ne.	1	0	0	0	0	0	0	0.2	0.0	12
0	0	nw.	2	ne.	2	ne.	1	ne.	1	0	0	e.	1	0	0	0	0	e.	1	0.9	0.4	13
se.	2	se.	1	e.	1	0	0	e.	1	e,	1	e.	1	e.	1	e.	1	e.	1	0.7	0.3	14
0	0	0	0	0	0	0	0	0	0	e.	1	0	0	0	0	0	0	0	0	0.3	0.1	15
0	0	ne.	1	0	0	0	0	0	0	ne.	1	0	0	se.	1	0	0	0	0	0.2	0.0	16
0	0	0	0	0	0	0	0	e.	1	0	0	e.	1	0	0	0	0	nw.	1	0.2	0.0	17
ne.	1	0	0	0	0	e.	2	nw.	1	0	0	ne.	1	e.	1	e.	1	0	0	0.5	0.2	18
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	19
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.0	20
e.	1	ne.	1	0	0	0	0	0	0	e.	1	0	0	0	0	0	0	ne.	1	0.3	0.1	21
0	0	0	0	0	0	0	0	se.	1	0	0	0	0	0	0	se.	2	se.	1	1.0	0.4	22
0	0	0	0	e.	1	0	0	0	0	0	0	0	0	e.	1	0	0	e.	1	0.5	0.2	23
0	0	0	0	0	0	0	0	0	0	ne.	1	0	0	0	0	0	0	0	0	0.3	0.1	24
0	0	0	0	0	0	ne.	1	0	0	0	0	0	0	ne.	1	0	0	ne.	2	0.3	0.1	25
ne.	1	0	0	ne.	2	ne.	1	ne.	2	0	0	0	0	0	0	0	0	0	0	0.6	0.3	26
ne.	1	ne.	1	0	0	ne.	1	0	0	ne.	1	0	0	ne.	1	ne.	1	0	0	0.5	0.2	27
0	0	0	0	0	0	0	0	e.	1	0	0	0	0	0	0	0	0	0	0	0.2	0.0	28
0.3		0.4		0.3		0.4		0.4		0.4		0.3		0.3		0.3		0.5		0.42	------	
0.1		0.2		0.1		0.2		0.2		0.2		0.1		0.1		0.1		0.2		0.2	0.2	

[a] Interpolated from dial.

MARCH, 1883.

TABLE CXXIV.—*Direction and velocity of the wind, March, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	0 0	0 0	e. 1	0 0	e. 1	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	e. 1	0 0
2	0 0	ne. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
3	0 0	0 0	0 0	0 0	ne. 1	0 0	ne. 1	0 0	0 0	se. 1	0 0	0 0	0 0	e. 2
4	0 0	0 0	0 0	0 0	ne. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
5	0 0	0 0	0 0	e. 1	se. 1	0 0	s. 1	s. 1	sw. 1	sw. 2	0 0	0 0	se. 1	0 0
6	s. 1	0 0	s. 1	s. 1	s. 1	se. 1	0 0	se. 1	se. 1	0 0	0 0	se. 1	se. 1	s. 2
7	n. 1	nw. 2	ne. 2	s. 7	s. 7	ne. 1	s. 3	0 0	0 0	0 0	se. 1	ne. 2	0 0	0 0
8	0 0	0 0	s. 1	ne. 1	n. 1	n. 2	s. 13	s. 40	**sw. 52**	s. 41	s. 40	s. 35	s. 23	s. 24
9	se. 13	s. 5	s. 8	ne. 7	0 0	ne. 1	0 0	0 0	e. 1	e. 1	e. 3	se. 1	0 0	0 0
10	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
11	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
12	ne. 1	s. 1	sw. 2	sw. 3	s. 2	s. 2	n. 5	n. 4	n. 2	nw. 1	ne. 2	nw. 2	ne. 3	e. 2
13	e. 1	e. 2	s. 2	e. 3	e. 2	e. 2	e. 3	e. 4	se. 3	se. 2	nw. 3	se. 1	sw. 2	nw. 1
14	e. 2	n. 2	n. 2	n. 3	sw. 2	sw. 1	sw. 1	sw. 2	sw. 2	se. 2	se. 3	ne. 2	ne. 2	sw. 2
15	s. 22	s. 6	nw. 7	e. 5	e. 5	se. 6	e. 4	se. 3	e. 5	ne. 8	ne. 7	se. 3	sw. 3	nw. 3
16	se. 2	e. 2	e. 2	ne. 2	e. 1	e. 3	e. 1	s. 1	s. 3	s. 2	ne. 2	ne. 4	ne. 2	ne. 2
17	ne. 3	e. 4	e. 2	e. 1	n. 3	ne. 2	e. 3	e. 1	e. 2	w. 2	e. 2	e. 2	sw. 3	se. 3
18	e. 2	se. 2	ne. 4	n. 4	n. 4	n. 3	ne. 1	se. 3	se. 2	se. 4	e. 2	e. 4	s. 1	se. 3
19	n. 5	n. 3	ne. 2	ne. 3	e. 2	e. 3	ne. 2	e. 2	e. 3	ne. 2	ne. 1	ne. 2	ne. 3	ne. 2
20	e. 2	e. 2	e. 3	ne. 2	e. 3	e. 2	ne. 3	e. 4	se. 3	se. 3	se. 2	se. 1	se. 2	0 0
21	w. 1	nw. 2	nw. 2	nw. 2	nw. 1	nw. 1	nw. 1	nw. 3	se. 2	se. 2	se. 3	e. 2	se. 2	e. 2
22	sw. 5	sw. 4	se. 3	s. 5	s. 5	s. 4	s. 3	s. 1	n. 2	se. 2	ne. 1	se. 1	se. 3	ne. 2
23	w. 2	w. 2	w. 2	w. 2	w. 1	w. 2	w. 1	sw. 2	se. 2	se. 2	se. 2	se. 4	se. 10	se. 14
24	ne. 5	ne. 6	ne. 6	ne. 2	ne. 2	ne. 3	ne. 3	e. 1	e. 3	nw. 2	e. 1	ne. 1	e. 2	e. 1
25	w. 2	ne. 2	se. 3	sw. 2	se. 2	s. 2	nw. 2	e. 1	e. 3	se. 3	se. 1	se. 2	se. 1	se. 2
26	w. 1	e. 1	e. 2	se. 4	se. 3	e. 6	se. 9	e. 10	e. 6	e. 6	e. 2	se. 2	se. 2	0 0
27	se. 1	se. 1	se. 2	nw. 1	nw. 1	se. 4	se. 5	ne. 2	se. 3	se. 2	se. 2	se. 1	se. 4	se. 1
28	0 0	0 0	ne. 2	se. 1	se. 1	se. 1	0 0	se. 1	se. 1	se. 1	se. 1	0 0	se. 1	0 0
29	0 0	se. 1	0 0	sw. 1	0 0	nw. 1	ne. 1	0 0	se. 1	se. 2	se. 1	s. 3	s. 2	s. 2
30	se. 1	se. 1	0 0	0 0	0 0	nw. 1	0 0	ne. 2	se. 2	se. 5	se. 4	se. 1	se. 3	se. 2
31	n. 1	n. 2	ne. 2	e. 1	e. 1	nw. 5	se. 2	0 0	se. 1	se. 1	se. 1	se. 2	0 0	se. 2
Means	2.4	1.7	2.1	2.1	1.7	1.9	2.2	2.9	**3.5**	3.2	2.8	2.5	2.5	2.4
Means in meters per second	1.1	0.8	0.9	0.9	0.8	0.8	1.0	1.3	**1.6**	1.4	1.3	1.1	1.1	1.1

MARCH, 1883.

TABLE CXXIV.—*Direction and velocity of the wind, March, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
o o	o o	o 1	o o	o o	o o	o o	o o	o o	n. 3	0.3	0.1	1
o o	o o	o o	ne. 1	o o	ne. 1	o o	o o	o o	o o	0.1	0.0	2
o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	0.2	0.0	3
o o	o o	o o	o o	o o	o o	o o	o o	o o	o o	0.0	0.0	4
o o	o o	o o	o o	e. 1	o o	o o	o o	o o	o o	0.4	0.2	5
o o	s. 1	nw. 2	w. 2	sw. 1	n. 1	o o	se. 2	n. 1	n. 2	1.0	0.4	6
o o	o o	s. 1	o o	o o	o o	o o	o o	o o	o o	1.1	0.5	7
s. 23	sw. 15	s. 13	s. 12	s. 15	s. 18	s. 13	s. 16	s. 9	se. 12	**17.5**	**7.8**	8
o o	sw. 1	sw. 2	o o	sw. 1	s. 1	o o	o o	o o	o o	1.9	0.8	9
o o	ne. 1	o o	o o	e. 1	e. 1	o o	o o	o o	o o	0.2	0.0	10
nw. 1	nw. 4	s. 5	se. 2	nw. 3	se. 3	n. 2	se. 2	w. 2	ne. 2	1.1	0.5	11
se. 2	e. 2	ne. 1	e. 2	ne. 4	se. 2	ne. 2	ne. 3	e. 2	e. 1	2.2	1.0	12
se. 2	ne. 1	ne. 2	w. 2	sw. 3	ne. 4	e. 2	e. 2	e. 4	n. 1	2.2	1.0	13
sw. 1	sw. 2	sw. 2	w. 2	e. 1	ne. 3	se. 4	e. 5	w. 5	s. 8	2.5	1.1	14
e. 4	n. 3	s. 4	s. 2	s. 3	s. 4	e. 2	e. 3	e. 2	e. 2	4.8	2.1	15
ne. 1	ne. 5	se. 2	e. 2	n. 3	se. 4	n. 4	nw. 2	nw. 7	nw. 6	2.7	1.2	16
e. 4	e. 3	ne. 2	n. 4	e. 3	e. 2	e. 2	se. 1	se. 3	se. 2	2.5	1.1	17
se. 1	se. 3	e. 2	nw. 3	se. 2	n. 2	se. 2	e. 3	e. 3	n. 3	2.6	1.2	18
ne. 1	ne. 3	e. 2	se. 2	e. 2	nw. 5	e. 2	e. 3	e. 2	w. 3	2.5	1.1	19
se. 2	e. 1	nw. 1	n. 2	se. 1	e. 1	n. 2	w. 1	w. 1	w. 1	1.9	0.8	20
se. 3	se. 1	n. 2	n. 5	ne. 3	e. 3	e. 3	e. 2	se. 2	se. 3	2.2	1.0	21
n. 1	n. 2	n. 2	n. 3	n. 2	n. 1	n. 1	n. 1	n. 1	w. 4	2.5	1.1	22
se. 13	se. 17	se. 16	se. 16	se. 14	s. 10	s. 8	e. 3	e. 6	ne. 5	6.5	2.9	23
e. 1	ne. 4	e. 9	ne. 2	n. 1	n. 1	w. 1	ne. 1	ne. 2	ne. 2	2.6	1.2	24
ne. 4	ne. 2	ne. 3	ne. 2	e. 3	ne. 3	ne. 1	ne. 1	se. 1	se. 1	2.0	0.9	25
se. 2	se. 4	s. 5	e. 4	e. 5	se. 2	s. 6	e. 3	e. 3	e. 3	3.8	1.7	26
se. 2	se. 1	se. 1	se. 1	se. 1	nw. 2	e. 1	se. 1	se. 1	se. 1	1.7	0.8	27
o o	se. 1	o o	e. 1	o o	se. 1	o o	e. 1	o o	e. 1	0.6	0.3	28
se. 2	se. 1	ne. 1	e. 1	e. 2	se. 1	se. 2	se. 2	se. 1	s. 1	1.2	0.5	29
[illegible]e. 2	e. 2	ne. 1	ne. 4	n. 2	ne. 2	ne. 2	se. 2	ne. 1	e. 2	1.8	0.8	30
se. 2	se. 1	e. 2	e. 2	ne. 2	ne. 3	ne. 1	se. 2	e. 2	e. 2	1.7	0.8	31
2.4	2.6	2.7	2.5	2.5	2.6	2.0	2.0	2.0	2.3	2.40	---------	
1.1	1.2	1.2	1.1	1.1	1.2	0.9	0.9	0.9	1.0	1.1	1.1	

APRIL, 1883.

TABLE CXXV.—*Direction and velocity of the wind, April, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	n. 1	ne. 2	se. 1	e. 2	n. 3	n. 1	e. 1	e. 2	se. 1	nw. 2	e. 1	e. 1	ne. 2	e. 2
2	ne. 1	nw. 1	e. 2	e. 1	e. 2	ne. 1	ne. 1	e. 2	se. 1	se. 1	se. 1	se. 1	se. 1	se. 1
3	e. 1	e. 1	e. 2	e. 3	e. 1	ne. 1	e. 2	e. 2	e. 1	e. 1	e. 1	e. 1	e. 1	e. 2
4	n. 2	ne. 1	nw. 2	sw. 2	e. 2	nw. 3	nw. 1	n. 1	n. 2	n. 2	n. 1	ne. 1	ne. 8	ne. 1
5	ne. 2	ne. 1	se. 2	n. 1	n. 1	sw. 1	0 0	nw. 1	ne. 1	ne. 1	ne. 1	ne. 1	ne. 1	ne. 4
6	e. 4	e. 6	e. 3	ne. 2	e. 1	e. 3	e. 3	ne. 4	e. 2	e. 2	e. 1	e. 1	e. 1	e. 1
7	n. 2	se. 2	e. 2	e. 11	e. 6	e. 1	ne. 1	0 0	ne. 1	0 0	ne. 1	ne. 1	ne. 1	n. 1
8	e. 1	e. 1	e. 1	se. 2	n. 1	se. 1	se. 2	ne. 2	se. 1	se. 2	se. 3	se. 4	se. 1	se. 2
9	e. 3	e. 5	e. 2	e. 6	w. 7	se. 4	se. 2	se. 1	e. 1	e. 1	e. 1	e. 2	e. 1	e. 1
10	e. 1	n. 2	s. 1	e. 2	e. 1	0 0	se. 2	ne. 2	ne. 3	ne. 2	ne. 2	e. 1	se. 2	e. 1
11	e. 2	se. 2	e. 3	e. 1	e. 4	ne. 2	ne. 2	e. 2	e. 1	ne. 4	se. 2	e. 3	ne. 1	se. 1
12	0 0	w. 1	ne. 2	n. 3	ne. 2	e. 2	e. 1	e. 1	e. 1	w. 1	0 0	e. 1	w. 2	se. 1
13	e. 1	e. 2	ne. 1	e. 1	e. 1	ne. 1	e. 1	ne. 1	ne. 1	ne. 2	e. 1	n. 1	e. 1	s. 1
14	e. 2	e. 6	e. 6	se. 3	n. 1	w. 1	e. 2	e. 1	e. 1	0 0	ne. 1	e. 2	e. 1	ne. 1
15	n. 1	n. 3	n. 1	e. 1	ne. 1	ne. 1	0 0	ne. 1	n. 2	ne. 1	se. 1	se. 1	w. 1	0 0
16	e. 3	se. 3	e. 4	e. 7	e. 1	n. 2	e. 1	se. 1	se. 1	se. 2	ne. 1	nw. 2	nw. 2	n. 1
17	e. 4	e. 2	ne. 3	e. 4	ne. 2	ne. 2	ne. 1	e. 1	0 0	e. 1	0 0	e. 1	e. 1	0 0
18	e. 3	e. 3	e. 1	e. 5	e. 1	e. 1	e. 2	e. 1	e. 1	ne. 2	ne. 1	ne. 2	ne. 1	ne. 1
19	w. 1	e. 1	ne. 1	ne. 1	0 0	sw. 1	se. 1	nw. 2	n. 2	n. 1	n. 2	n. 2	n. 1	n. 4
20	ne. 5	se. 2	ne. 2	e. 1	ne. 2	s. 5	n. 2	ne. 1	e. 3	e. 1	sw. 3	sw. 2	sw. 2	s. 1
21	e. 2	w. 1	0 0	se. 1	0 0	e. 1	0 0	0 0	e. 1	0 0	se. 1	se. 1	s. 1	sw. 1
22	sw. 3	sw. 8	s. 10	sw. 10	s. 1	se. 6	se. 4	e. 3	e. 2	e. 4	e. 1	ne. 1	e. 2	nw. 2
23	e. 5	e. 1	e. 2	se. 3	sw. 1	0 0	se. 1	se. 1	0 0	ne. 1	ne. 1	0 0	sw. 1	0 0
24	0 0	0 0	0 0	0 0	se. 1	se. 1	0 0	se. 1	0 0	e. 1	0 0	0 0	ne. 1	0 0
25	e. 1	e. 1	0 0	se. 1	0 0	0 0	0 0	se. 1	0 0	e. 1	0 0	e. 1	0 0	e. 1
26	e. 1	e. 3	e. 1	e. 1	e. 1	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	e. 1	nw. 1
27	e. 3	e. 3	e. 2	e. 1	0 0	e. 1	0 0	0 0	e. 1	0 0	0 0	se. 1	ne. 2	0 0
28	0 0	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	ne. 1	0 0	e. 1
29	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	e. 2	ne. 1	ne. 3
30	e. 2	0 0	0 0	e. 1	0 0	0 0	0 0	e. 1	0 0	0 0	0 0	e. 1	0 0	0 0
Means	1.9	2.1	1.9	2.6	1.5	1.4	1.1	1.2	1.0	1.2	0.9	1.3	1.4	1.2
Means in meters per second	0.8	0.9	0.8	1.2	0.7	0.6	0.5	0.5	0.4	0.5	0.4	0.6	0.6	0.5

APRIL, 1883.

TABLE CXXV.—*Direction and velocity of the wind, April, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
o 0	nw. 1	nw. 1	o 0	nw. 3	nw. 2	ne. 1	se. 2	e. 1	e. 2	1.5	0.7	1
se. 2	se. 1	e. 1	e. 2	e. 1	nw. 2	ne. 2	ne. 5	nw. 2	e. 1	1.5	0.7	2
e. 1	e. 2	ne. 2	ne. 2	nw. 1	sw. 3	ne. 4	ne. 2	ne. 2	e. 2	1.7	0.8	3
ne. 3	ne. 4	ne. 2	nw. 2	ne. 1	ne. 3	e. 3	ne. 1	ne. 2	o 0	2.1	0.9	4
ne. 3	ne. 3	n. 5	se. 4	e. 2	ne. 6	ne. 2	e. 3	e. 2	nw. 6	2.2	1.0	5
e. 1	e. 1	se. 2	se. 1	e. 3	w. 1	e. 1	e. 2	e. 1	se. 2	2.0	0.9	6
n. 1	n. 2	sw. 2	nw. 3	se. 2	w. 3	se. 2	ne. 3	e. 7	se. 2	2.4	1.1	7
e. 3	e. 3	n. 2	nw. 2	e. 1	e. 2	e. 5	e. 1	e. 4	e. 3	2.1	0.9	8
e. 1	e. 1	e. 1	e. 1	se. 3	e. 3	e. 2	o 0	e. 1	e. 1	2.1	0.9	9
e. 1	s. 1	ne. 2	e. 1	nw. 2	o 0	ne. 3	e. 2	e. 2	e. 2	1.6	0.7	10
e. 1	nw. 2	se. 1	n. 2	e. 3	s. 3	e. 4	e. 4	e. 6	e. 2	2.4	1.1	11
e. 1	se. 1	se. 2	e. 2	e. 2	e. 1	nw. 1	se. 1	e. 1	e. 1	1.3	0.6	12
s. 1	se. 1	e. 2	se. 2	se. 1	se. 2	e. 4	se. 3	e. 1	e. 2	1.5	0.7	13
ne. 2	ne. 1	e. 2	e. 3	s. 1	se. 1	se. 1	e. 3	ne. 1	ne. 2	1.9	0.8	14
ne. 1	nw. 2	o 0	se. 1	ne. 1	e. 3	e. 4	e. 6	e. 2	e. 3	1.6	0.7	15
n. 2	ne. 1	e. 2	se. 2	o 0	e. 2	e. 1	e. 1	n. 6	e. 3	2.1	0.9	16
e. 1	o 0	e. 1	e. 2	ne. 2	ne. 1	se. 2	e. 2	e. 2	e. 2	1.5	0.7	17
ne. 1	ne. 2	ne. 1	e. 2	e. 2	se. 2	e. 3	e. 3	e. 1	o 0	1.8	0.8	18
n. 1	n. 1	e. 2	ne. 1	e. 4	e. 3	ne. 3	e. 4	e. 3	ne. 4	1.9	0.8	19
s. 3	s. 2	se. 2	e. 3	se. 3	s. 11	**sw. 15**	nw. 5	ne. 3	ne. 5	**3.5**	**1.6**	20
sw. 3	sw. 2	o 0	o 0	o 0	se. 1	o 0	se. 1	o 0	o 0	0.7	0.3	21
o 0	e. 1	nw. 1	o 0	e. 2	o 0	o 0	ne. 1	e. 2	ne. 1	2.7	1.2	22
o 0	o 0	o 0	o 0	o 0	ne. 1	o 0	o 0	o 0	o 0	0.8	0.4	23
o 0	o 0	se. 1	se. 1	e. 1	e. 1	e. 1	e. 2	e. 3	se. 1	0.7	0.3	24
o 0	e. 1	o 0	e. 1	e. 1	e. 3	e. 3	o 0	e. 4	e. 1	0.9	0.4	25
o 0	e. 1	o 0	e. 1	ne. 1	ne. 2	ne. 1	ne. 2	ne. 1	ne. 1	0.8	0.4	26
o 0	o 0	ne. 1	ne. 1	e. 2	e. 5	e. 5	e. 7	o 0	o 0	1.5	0.7	27
o 0	e. 1	o 0	o 0	e. 2	o 0	e. 4	e. 2	e. 4	e. 3	0.8	0.4	28
ne. 1	e. 1	o 0	ne. 2	e. 3	e. 3	e. 3	e. 2	e. 2	e. 1	1.0	0.4	29
o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	o 0	e. 1	0.2	0.0	30
1.1	1.3	1.3	1.5	1.7	2.3	**2.7**	2.3	2.3	1.8	1.62	....	
0.5	0.6	0.6	0.7	0.8	1.0	**1.2**	1.0	1.0	0.8	0.7	0.7	

MAY, 1883.

TABLE CXXVI.—*Direction and velocity of the wind, May, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	e. 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
2	0 0	ne. 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	e. 1	0 0	0 0
3	e. 10	e. 11	e. 11	e. 8	e. 10	e. 7	e. 7	e. 1	0 0	e. 1	0 0	0 0	0 0	e. 1
4	e. 4	e. 5	e. 7	e. 3	e. 4	e. 3	e. 1	e. 1	e. 2	e. 1	e. 1	nw. 1	nw. 1	nw. 2
5	ne. 6	e. 5	e. 5	e. 2	0 0	n. 1	ne. 1	ne. 1	e. 1	ne. 1	e. 2	ne. 1	e. 2	e. 1
6	e. 1	e. 2	se. 4	e. 2	e. 1	e. 1	e. 1	e. 2	e. 2	se. 1	se. 2	0 0	e. 2	e. 1
7	e. 1	ne. 2	se. 1	e. 2	e. 2	e. 1	e. 2	e. 1	e. 1	e. 1	e. 2	ne. 2	ne. 1	e. 1
8	e. 2	e. 1	e. 3	e. 3	e. 5	e. 2	e. 1	e. 1	se. 1	ne. 1	w. 1	nw. 1	se. 2	ne. 1
9	n. 4	ne. 4	ne. 2	ne. 3	ne. 1	ne. 2	ne. 2	n. 2	ne. 2	se. 1	e. 1	ne. 2	e. 1	e. 2
10	e. 1	e. 3	e. 2	ne. 1	ne. 2	e. 1	e. 2	n. 1	n. 2	ne. 2	ne. 2	ne. 1	ne. 2	ne. 1
11	ne. 1	0 0	ne. 1	se. 1	n. 1	e. 1	0 0	e. 1	se. 1	0 0	ne. 2	ne. 1	ne. 1	0 0
12	se. 2	e. 1	sw. 1	nw. 2	n. 2	ne. 2	0 0	e. 2	ne. 2	se. 2	se. 1	sw. 2	sw. 1	ne. 2
13	ne. 2	ne. 2	s. 3	e. 2	e. 2	w. 2	ne. 2	s. 2	se. 6	se. 5	n. 3	ne. 7	ne. 4	se. 6
14	e. 11	ne. 19	e. 25	se. 23	ne. 14	ne. 19	e. 18	ne. 16	ne. 24	ne. 26	**ne. 40**	ne. 19	ne. 22	ne. 24
15	nw. 4	n. 3	n. 3	nw. 7	w. 6	nw. 7	nw. 6	nw. 5	se. 3	nw. 6	sw. 5	nw. 6	sw. 8	sw. 6
16	se. 6	se. 2	n. 2	w. 1	nw. 1	nw. 2	nw. 1	n. 1	n. 1	0 0	n. 1	0 0	n. 1	w. 1
17	ne. 7	ne. 4	ne. 5	ne. 1	0 0	0 0	ne. 1	ne. 1	se. 1	0 0	ne. 1	ne. 1	0 0	s. 1
18	e. 2	e. 2	e. 1	e. 1	0 0	e. 2	e. 1	e. 1	e. 1	s. 1	w. 1	s. 1	sw. 2	sw. 1
19	e. 2	e. 1	nw. 1	nw. 1	nw. 1	nw. 1	nw. 1	sw. 1	sw. 2	sw. 1	s. 1	s. 1	sw. 1	sw. 1
20	e. 1	se. 1	se. 2	ne. 3	ne. 1	ne. 1	ne. 2	ne. 1	0 0	s. 1	s. 2	se. 2	ne. 2	w. 1
21	e. 2	e. 2	se. 2	e. 2	e. 1	e. 2	e. 2	se. 2	nw. 2	nw. 2	nw. 2	sw. 2	sw. 4	sw. 2
22	e. 2	0 0	se. 3	se. 1	se. 2	se. 1	se. 3	se. 2	se. 1	se. 1	nw. 1	0 0	nw. 1	0 0
23	ne. 1	0 0	e. 1	e. 1	e. 1	e. 1	se. 1	se. 1	se. 1	se. 1	e. 1	e. 1	e. 1	0 0
24	e. 2	e. 2	e. 8	e. 8	e. 11	e. 4	se. 7	se. 1	se. 2	nw. 1	sw. 2	w. 2	sw. 2	w. 3
25	se. 3	se. 1	se. 1	se. 1	se. 2	se. 1	se. 2	se. 1	se. 1	e. 2	se. 1	se. 2	se. 4	se. 3
26	sw. 2	sw. 2	s. 2	s. 3	s. 2	s. 1	s. 1	s. 1	s. 2	nw. 1	sw. 2	s. 1	nw. 1	nw. 2
27	0 0	s. 1	0 0	0 0	s. 1	s. 1	s. 2	s. 6	se. 3	ne. 9	ne. 16	ne. 20	e. 21	ne. 13
28	ne. 23	ne. 24	w. 17	w. 12	w. 7	sw. 3	sw. 7	sw. 6	sw. 3	se. 2	s. 1	s. 1	sw. 2	n. 3
29	n. 17	n. 12	e. 2	e. 1	0 0	e. 1	e. 1	e. 1	0 0	e. 1	ne. 1	ne. 2	ne. 1	ne. 1
30	s. 12	s. 15	s. 20	s. 19	s. 20	s. 23	s. 14	s. 19	se. 20	se. 22	se. 19	se. 21	se. 23	s. 23
31	ne. 12	s. 5	ne. 3	e. 3	se. 1	s. 1	s. 6	s. 20	s. 27	s. 33	s. 18	s. 16	s. 18	sw. 28
Means	**4.6**	4.3	4.5	3.8	3.3	3.0	3.1	3.3	3.7	4.1	4.3	3.8	4.2	4.2
Means in meters per second	**2.1**	1.9	2.0	1.7	1.5	1.3	1.4	1.5	1.7	1.8	1.9	1.7	1.9	1.9

MAY, 1883.

TABLE CXXVI.—*Direction and velocity of the wind, May, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		Date.
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	
o 0	e. 1	o 0	o 0	o 0	o 0	o 0	o 0	o 0	e. 1	0.1	0.0	1
ne. 1	nw. 2	nw. 4	e. 2	ne. 1	e. 4	ne. 5	ne. 1	ne. 10	ne. 5	1.6	0.7	2
o 0	e. 2	o 0	ne. 1	ne. 5	ne. 5	e. 3	e. 1	e. 5	e. 2	3.8	1.7	3
sw. 1	nw. 2	w. 1	e. 1	e. 2	ne. 2	ne. 5	ne. 5	ne. 5	ne. 3	2.6	1.2	4
nw. 2	nw. 2	e. 1	e. 1	e. 1	e. 2	nw. 1	se. 1	e. 2	e. 1	1.8	0.8	5
e. 2	ne. 1	e. 2	nw. 1	e. 2	ne. 1	e. 2	e. 1	e. 1	e. 1	1.5	0.7	6
e. 1	e. 1	se. 1	nw. 1	e. 2	w. 1	se. 2	n. 2	ne. 4	ne. 2	1.5	0.7	7
e. 1	e. 1	o 0	nw. 1	ne. 1	ne. 2	nw. 2	nw. 4	ne. 5	nw. 4	1.9	0.8	8
e. 1	ne. 1	ne. 2	ne. 2	e. 2	nw. 1	ne. 3	ne. 2	ne. 2	ne. 2	2.0	0.9	9
ne. 1	ne. 1	ne. 2	ne. 1	e. 2	e. 2	e. 3	n. 2	w. 3	nw. 1	1.7	0.8	10
ne. 1	ne. 1	ne. 2	ne. 2	ne. 1	ne. 2	ne. 1	ne. 1	ne. 1	ne. 2	1.0	0.4	11
ne. 1	w. 1	n. 1	n. 1	n. 2	n. 1	n. 2	n. 2	n. 2	n. 1	1.5	0.7	12
e. 2	e. 11	e. 9	e. 10	e. 10	e. 6	e. 4	e. 8	s. 2	s. 3	4.7	2.1	13
ne. 25	ne. 26	ne. 21	sw. 10	sw. 9	sw. 8	sw. 9	sw. 5	sw. 7	sw. 4	**17.7**	**7.9**	14
nw. 10	nw. 2	sw. 6	sw. 5	sw. 6	w. 6	w. 8	w. 2	w. 4	w. 3	5.3	2.4	15
n. 1	o 0	se. 1	e. 1	e. 3	ne. 4	ne. 6	ne. 7	ne. 8	ne. 8	2.5	1.1	16
e. 1	e. 1	ne. 3	ne. 1	ne. 1	ne. 5	e. 3	e. 4	e. 4	e. 1	2.0	0.9	17
sw. 1	sw. 1	ne. 2	e. 2	e. 2	e. 1	n. 3	o 0	n. 3	sw. 3	1.5	0.7	18
sw. 1	se. 1	w. 1	e. 1	nw. 1	nw. 2	e. 1	e. 1	e. 1	e. 2	1.2	0.5	19
sw. 1	s. 1	e. 1	e. 1	e. 2	nw. 1	se. 2	n. 2	ne. 2	ne. 1	1.4	0.6	20
e. 7	e. 11	s. 10	s. 4	se. 2	e. 1	ne. 2	se. 1	e. 3	ne. 1	3.0	1.3	21
w. 1	o 0	n. 1	o 0	ne. 1	se. 1	ne. 1	n. 1	ne. 2	o 0	1.1	0.5	22
e. 1	ne. 1	o 0	e. 1	e. 1	se. 1	ne. 1	o 0	n. 2	sw. 4	1.0	0.4	23
s. 3	sw. 3	se. 2	s. 5	se. 9	se. 8	se. 11	sw. 4	se. 1	s. 2	4.3	1.9	24
se. 3	se. 5	sw. 3	sw. 2	sw. 3	sw. 2	sw. 2	sw. 3	sw. 2	sw. 2	2.2	1.0	25
nw. 2	nw. 1	nw. 1	nw. 2	nw. 1	o* 0	nw. 1	nw. 1	nw. 1	o 0	1.4	0.6	26
ne. 14	ne. 16	ne. 16	ne. 18	ne. 20	ne. 16	ne. 16	ne. 16	ne. 17	ne. 19	10.9	4.9	27
e. 1	o 0	ne. 1	w. 2	w. 1	s. 1	ne. 3	n. 8	n. 11	n. 13	6.3	2.8	28
ne. 1	o 0	o 0	w. 2	nw. 1	nw. 2	s. 6	nw. 3	s. 4	s. 13	3.0	1.3	29
s. 16	s. 11	se. 8	se. 8	sw. 10	ne. 5	ne. 5	e. 3	e. 2	n. 5	14.3	6.4	30
sw. 28	sw. 29	sw. 25	sw. 16	s. 11	s. 23	s. 23	sw. 24	sw. 22	sw. 14	16.9	7.6	31
4.2	4.4	4.1	3.4	3.7	3.7	4.4	3.7	4.5	4.0	3.93	--------	
1.9	2.0	1.8	1.5	1.7	1.7	2.0	1.7	2.0	1.8	1.7	1.8	

JUNE, 1883.

TABLE CXXVII.—*Direction and velocity of the wind, June, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

Date.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	s. 18	s. 9	se. 13	se. 13	sw. 14	s. 7	se. 7	s. 8	s. 15	s. 18	s. 17	s. 18	s. 22	s. 21
2	ne. 5	ne. 7	n. 8	n. 13	s. 5	ne. 2	se. 1	nw. 5	w. 2	e. 1	w. 2	w. 1	w. 1	sw. 1
3	sw. 3	sw. 2	nw. 1	nw. 4	nw. 2	w. 1	s. 2	s. 1	sw. 1	sw. 2	sw. 2	sw. 1	sw. 1	se. 2
4	nw. 3	nw. 1	nw. 2	ne. 2	nw. 2	nw. 1	se. 4	se. 3	sw. 2	ne. 3	nw. 4	se. 4	sw. 3	sw. 3
5	w. 1	o o	ne. 2	nw. 2	n. 2	nw. 3	nw. 3	ne. 2	sw. 4	w. 2	w. 2	w. 1	w. 3	sw. 3
6	w. 1	s. 1	nw. 1	s. 2	nw. 1	s. 1	s. 2	o o	w. 2	w. 2	w. 1	w. 1	w. 2	w. 1
7	s. 11	s. 13	s. 9	s. 9	s. 12	s. 14	s. 17	s. 15	s. 13	s. 19	s. 25	s. 26	s. 20	sw. 24
8	s. 15	s. 14	se. 13	se. 8	sw. 11	nw. 9	s. 3	se. 4	s. 9	s. 5	s. 3	s. 2	s. 2	s. 5
9	ne. 5	sw. 4	n. 7	n. 13	nw. 8	n. 6	se. 8	s. 5	se. 8	ne. 17	ne. 28	ne. 26	n. 21	n. 24
10	sw. 4	w. 6	w. 5	nw. 4	w. 5	w. 5	w. 6	s. 4	sw. 3	sw. 2	sw. 4	sw. 4	sw. 2	sw. 3
11	sw. 3	sw. 2	sw. 3	sw. 2	sw. 2	sw. 2	w. 4	nw. 5	w. 5	sw. 3	sw. 4	sw. 3	sw. 4	sw. 5
12	nw. 2	nw. 3	sw. 1	sw. 3	sw. 3	sw. 2	sw. 3	sw. 3	sw. 2	sw. 3	sw. 2	w. 2	w. 2	w. 2
13	sw. 1	sw. 2	sw. 1	sw. 1	sw. 1	s. 3	s. 7	se. 8	se. 15	se. 13	s. 12	s. 12	s. 18	s. 5
14	s. 6	se. 12	se. 9	se. 12	se. 12	se. 8	s. 5	nw. 4	nw. 1	nw. 1	nw. 3	w. 3	w. 2	w. 3
15	nw. 9	w. 5	sw. 2	sw. 1	sw. 1	se. 1	sw. 2	nw. 1	sw. 8	s. 6	sw. 3	sw. 3	sw. 5	sw. 3
16	s. 3	sw. 4	sw. 2	nw. 1	nw. 1	sw. 1	s. 3	nw. 2	s. 5	s. 12	s. 5	se. 5	s. 4	s. 5
17	e. 2	sw. 2	nw. 4	w. 4	w. 2	sw. 2	nw. 4	nw. 2	w. 1	o o	w. 1	sw. 1	sw. 2	sw. 1
18	sw. 2	s. 3	sw. 7	w. 11	w. 6	se. 10	ne. 20	ne. 20	ne. 20	ne. 20	ne. 20	ne. 18	ne. 18	ne. 17
19	w. 2	w. 1	nw. 1	nw. 2	w. 1	w. 2	w. 7	w. 6	ne. 6	ne. 8	sw. 5	s. 8	sw. 5	sw. 7
20	s. 1	s. 1	sw. 1	nw. 5	nw. 3	nw. 4	nw. 1	nw. 2	nw. 2	nw. 2	nw. 1	w. 2	sw. 1	w. 2
21	s. 2	o o	sw. 1	sw. 1	sw. 2	sw. 1	sw. 1	sw. 2	nw. 2	nw. 1	nw. 1	w. 1	sw. 2	sw. 2
22	sw. [illegible]	sw. 3	sw. 3	sw. 3	sw. 2	sw. 2	s. 4	s. 3	sw. 2	sw. 3	sw. 3	sw. 2	sw. 2	sw. 2
23	s. [illegible]	o o	o o	o o	o o	o o	o o	o o	sw. 3	sw. 2	sw. 3	sw. 2	sw. 1	sw. 1
24	ne. 19	ne. 20	n. 17	n. 12	ne. 12	ne. 25	ne. 24	ne. 19	ne. 27	**ne. 37**	n. 31	n. 17	nw. 20	n. 17
25	w. 12	w. 8	w. 11	w. 10	sw. 9	sw. 8	w. 4	sw. 6	w. 5	w. 7	w. 6	w. 3	sw. 3	sw. 6
26	sw. 1	o o	sw. 1	sw. 2	o o	sw. 2	o o	sw. 1	sw. 1	sw. 2	sw. 1	se. 2	e. 11	se. 14
27	s. 1	se. 1	sw. 1	sw. 1	w. 1	o o	w. 1	sw. 2	se. 1	se. 4	e. 2	sw. 5	s. 3	e. 11
28	w. 1	o o	w. 3	w. 4	w. 1	w. 3	sw. 5	sw. 2	sw. 3	se. 3	e. 3	sw. 3	sw. 12	ne. 13
29	ne. 4	ne. 14	ne. 13	ne. 12	ne. 11	ne. 13	ne. 13	ne. 17	ne. 21	ne. 25	ne. 19	ne. 14	ne. 13	ne. 15
30	sw. 2	sw. 5	sw. 2	sw. 2	sw. 1	sw. 1	sw. 3	sw. 1	s. 3	sw. 3	sw. 3	sw. 3	sw. 3	sw. 3
Means	4.7	4.8	4.8	5.3	4.4	4.6	5.5	5.1	6.5	**7.5**	7.2	6.4	6.9	7.4
Means in meters per second	2.1	2.1	2.1	2.4	2.0	2.1	2.5	2.3	2.9	**3.4**	3.2	2.9	3.1	3.3

JUNE, 1883.

TABLE CXXVII.—*Direction and velocity of the wind, June, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
s. 18	s. 19	s. 17	se. 13	se. 11	s. 10	s. 11	ne. 9	ne. 2	ne. 3	13.0	5.8	1
ne. 2	sw. 4	sw. 4	sw. 5	sw. 5	s. 2	e. 1	e. 1	e. 1	w. 3	3.4	1.5	2
nw. 2	sw. 3	n. 2	ne. 1	e. 2	e. 4	ne. 2	n. 4	e. 4	s. 1	2.1	0.9	3
sw. 1	sw. 1	sw. 1	n. 2	ne. 2	o o	e. 2	e. 1	sw. 1	o o	2.0	0.9	4
sw. 4	w. 1	sw. 1	sw. 2	o o	w. 2	sw. 2	s. 2	se. 1	s. 2	2.0	0.9	5
w. 1	w. 2	w. 2	w. 1	w. 2	nw. 1	nw. 2	nw. 1	sw. 3	s. 9	1.8	0.8	6
sw. 25	sw. 22	sw. 22	sw. 23	s. 24	s. 23	s. 19	s. 17	s. 13	sw. 18	**18.0**	**8.0**	7
s. 3	s. 6	sw. 6	sw. 7	sw. 2	sw. 3	e. 4	se. 6	se. 7	e. 6	6.4	2.9	8
n. 19	nw. 14	n. 19	sw. 14	sw. 7	w. 2	w. 3	w. 4	nw. 2	ne. 3	11.1	5.0	9
sw. 4	sw. 2	sw. 2	w. 2	sw. 2	sw. 3	sw. 2	sw. 2	nw. 1	sw. 1	3.3	1.5	10
sw. 5	sw. 4	sw. 4	sw. 3	sw. 4	sw. 3	sw. 2	sw. 3	sw. 3	sw. 4	3.4	1.5	11
w. 2	w. 2	w. 2	sw. 3	sw. 2	sw. 2	sw. 3	sw. 3	sw. 5	sw. 4	2.5	1.1	12
s. 8	s. 14	s. 10	sw. 12	s. 6	s. 12	s. 8	s. 8	s. 15	se. 8	8.3	3.7	13
w. 5	w. 2	e. 3	ne. 16	e. 18	e. 17	e. 16	e. 13	ne. 15	ne. 15	8.4	3.8	14
sw. 4	w. 3	nw. 1	nw. 2	w. 2	nw. 1	nw. 2	nw. 2	w. 2	sw. 1	2.9	1.3	15
sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 3	sw. 2	sw. 3	3.1	1.4	16
s. 1	w. 2	w. 3	nw. 3	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 3	2.1	0.9	17
ne. 14	ne. 14	e. 12	ne. 13	ne. 16	ne. 25	nw. 16	w. 10	sw. 5	w. 2	13.3	5.9	18
sw. 5	sw. 5	s. 3	s. 2	s. 2	o o	s. 2	s. 1	s. 1	s. 1	3.5	1.6	19
nw. 1	s. 2	w. 2	se. 2	w. 2	nw. 2	w. 1	sw. 3	sw. 1	o o	1.8	0.8	20
sw. 2	sw. 2	sw. 2	sw. 1	sw. 3	sw. 1	sw. 2	sw. 1	sw. 1	sw. 1	1.5	0.7	21
sw. 2	sw. 2	sw. 1	sw. 1	sw. 2	sw. 2	sw. 2	sw. 1	o o	sw. 1	2.0	0.9	22
sw. 1	sw. 2	se. 5	3. 7	se. 11	ne. 7	ne. 16	ne. 22	ne. 21	ne. 19	5.2	2.3	23
n. 13	ne. 22	n. 18	ne. 15	w. 8	w. 5	w. 5	e. 5	sw. 5	w. 8	16.7	7.5	24
sw. 4	sw. 3	sw. 4	sw. 3	sw. 3	sw. 2	sw. 4	sw. 1	sw. 1	sw. 1	5.2	2.3	25
se. 13	e. 16	e. 16	e. 12	e. 10	e. 9	se. 5	o o	se. 1	o o	5.0	2.2	26
e. 13	w. 7	w. 6	w. 2	w. 2	w. 3	w. 3	o o	w. 3	w. 2	3.0	1.3	27
ne. 15	ne. 17	ne. 16	ne. 14	ne. 16	ne. 15	ne. 14	w. 4	sw. 3	sw. 3	7.2	3.2	28
ne. 19	ne. 21	nw. 16	w. 7	sw. 7	sw. 5	sw. 3	sw. 1	sw. 3	sw. 2	12.0	5.4	29
sw. 3	sw. 3	sw. 3	sw. 2	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 2	2.4	1.1	30
7.0	7.3	6.8	6.4	5.9	5.6	5.2	4.4	4.2	4.2	5.76	--------	
3.1	3.3	3.0	2.9	2.6	2.5	2.3	2.0	2.3	2.3	2.6	2.6	

JULY, 1883.

TABLE CXXVIII.—*Direction and velocity of the wind, July,* 1883.

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

[Velocity, miles per hour.]

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1	sw. 3	sw. 3	nw. 3	nw. 1	w. 2	w. 1	w. 2	sw. 3	w. 3	w. 2	sw. 5	sw. 5	sw. 5	sw. 4
2	sw. 2	sw. 1	sw. 1	sw. 1	sw. 2	sw. 1	sw. 1	sw. 4	sw. 4	sw. 2	s. 2	s. 4	s. 3	s. 3
3	sw. 1	sw. 2	sw. 2	sw. 2	sw. 2	s. 1	s. 4	s. 4	s. 3	s. 4	s. 2	s. 3	s. 6	s. 3
4	s. 3	s. 2	s. 3	sw. 4	s. 2	sw. 2	sw. 3	sw. 2	sw. 2	s. 2	s. 2	s. 3	s. 1	sw. 3
5	sw. 2	sw. 4	sw. 3	sw. 1	sw. 1	sw. 3	sw. 2	sw. 4	sw. 2	sw. 3	sw. 3	sw. 3	sw. 3	sw. 3
6	sw. 4	sw. 4	sw. 5	sw. 5	s. 8	sw. 4	s. 9	sw. 13	sw. 10	s. 10	s. 8	s. 5	s. 4	s. 4
7	s. 2	sw. 1	s. 4	s. 2	s. 2	0 0	s. 1	s. 3	s. 5	w. 5	sw. 3	se. 6	s. 5	s. 2
8	sw. 3	0 0	sw. 1	sw. 2	sw. 3	sw. 1	sw. 2	sw 1	sw. 2	sw. 3	sw. 3	sw. 2	sw. 2	sw. 2
9	sw. 2	sw. 1	sw. 3	sw. 3	sw. 5	sw. 2	sw. 4	sw. 2	s. 2	s. 3	s. 2	s. 3	s. 2	s. 3
10	sw. 3	s. 5	s. 5	s. 3	s. 2	s. 1	s. 2	s. 2	s. 2	s. 2	s. 4	s. 3	s. 4	s. 2
11	s. 2	s. 1	s. 2	s. 1	s. 1	s. 4	s. 3	s. 3	s. 3	s. 3	s. 4	s. 2	s. 4	s. 2
12	sw. 1	sw. 1	s. 1	s. 1	s. 1	s. 2	s. 1	s. 2	s. 3	s. 2	s. 1	s. 2	s. 1	e. 2
13	s. 2	s. 2	s. 2	s. 2	sw. 4	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 2
14	0 0	sw. 1	sw. 2	sw. 2	sw. 1	sw. 1	sw. 2	sw. 3	sw. 3	sw. 3	sw. 3	sw. 4	sw. 3	sw. 2
15	nw. 1	nw. 2	w. 1	sw. 2	sw. 3	sw. 1	sw. 1	sw. 2	sw. 1	w. 2	nw. 5	sw. 3	sw. 3	w. 1
16	se. 5	se. 3	se. 4	s. 6	nw. 2	sw. 2	ne. 1	ne. 2	sw. 1	sw. 3	sw. 4	nw. 2	nw. 2	nw. 2
17	sw. 9	se. 8	se. 9	nw. 4	se. 4	sw. 11	se. 5	sw. 5	sw. 7	sw. 2	se. 7	se. 11	se. 10	sw. 5
18	sw. 2	sw. 2	nw. 1	nw. 2	n. 2	nw. 2	w. 3	nw. 1	nw. 3	nw. 3	sw. 2	sw. 2	s. 5	s. 3
19	sw. 8	s. 3	se. 12	s. 7	nw. 6	sw. 3	sw. 3	w. 4	w. 2	nw. 3	w. 2	w. 3	nw. 5	se. 4
20	sw. 1	sw. 1	sw. 1	sw. 1	sw. 1	ne. 2	w. 4	s. 4	s. 10	ne. 12	ne. 19	ne. 19	ne. 22	ne. 29
21	sw. 3	sw. 1	0 0	sw. 3	w. 1	nw. 2	nw. 2	sw. 2	sw. 2	sw. 1	w. 2	nw. 2	nw. 1	sw. 2
22	nw. 3	w. 1	w. 1	se. 1	s. 1	nw. 2	w. 2	w. 3	se. 7	se. 14	s. 16	s. 16	s. 15	s. 13
23	sw. 2	sw. 2	sw. 3	sw. 4	sw. 1	0 0	sw. 2	sw. 1	0 0	0 0	nw. 1	w. 1	nw. 1	0 0
24	nw. 1	sw. 1	0 0	nw. 2	0 0	se. 2	sw. 2	sw. 1	sw. 1	sw. 1	sw. 1	sw. 2	sw. 1	nw. 3
25	nw. 3	nw. 1	sw. 1	se. 1	se. 10	e. 16	se. 10	ne. 3	e. 14	e. 14	e. 16	e. 14	nw. 8	nw. 3
26	sw. 4	sw. 2	sw. 2	0 0	sw. 1	0 0	sw. 1	sw. 1	sw. 1	w. 1	w. 2	0 0	w. 1	w. 2
27	e. 16	e. 14	e. 16	e. 22	e. 19	e. 21	e. 19	se. 15	ne. 9	se. 6	s. 4	s. 1	sw. 3	s. 2
28	s. 3	s. 2	s. 3	s. 5	s. 3	s. 2	s. 2	s. 3	s. 4	w. 2	sw. 2	sw. 1	sw. 2	sw. 2
29	w. 2	nw. 4	sw. 1	sw. 1	sw. 1	se. 1	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 3	sw. 4	sw. 3
30	s. 14	se. 15	se. 10	se. 10	se. 11	s. 11	s. 4	s. 14	se. 10	sw. 11	w. 2	se. 5	se. 8	se. 11
31	nw. 1	s. 7	s. 12	s. 12	s. 2	s. 2	sw. 7	sw. 2	se. 2	se. 14	se. 7	se. 11	se. 10	se. 7
Means	3.5	3.1	3.7	3.6	3.4	3.4	3.2	3.6	3.9	4.4	4.4	4.6	4.7	4.2
Means in meters per second	1.6	1.4	1.7	1.6	1.5	1.5	1.4	1.6	1.7	2.0	2.0	2.1	2.1	1.9

JULY, 1883.

TABLE CXXVIII.—*Direction and velocity of the wind, July, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

Anemometer above the ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

[Velocity, miles per hour.]

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean daily velocity.		
Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Miles per hour.	Meters per second.	Date.
sw. 4	sw. 3	sw, 3	sw. 2	sw. 2	sw. 1	sw. 2	o 0	sw. 2	sw. 2	2.6	1.2	1
s. 3	s. 3	sw. 1	sw. 1	sw. 2	sw. 1	sw. 2	sw. 1	sw. 3	sw. 3	2.1	0.9	2
s. 3	s. 2	s. 2	s. 3	s. 2	s. 3	s. 2	nw. 3	nw. 1	sw. 2	2.6	1.2	3
sw. 1	sw. 3	sw. 3	s. 1	nw. 3	sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	2.3	1.0	4
sw. 3	sw. 3	sw. 3	sw. 2	w. 2	w. 3	w. 3	sw. 3	sw. 4	nw. 5	2.8	1.3	5
s. 2	s. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 2	sw. 3	sw. 3	sw. 1	4.7	2.1	6
s. 3	se. 12	se. 15	nw. 9	w. 3	nw. 2	nw. 2	se. 3	nw. 2	w. 3	4.0	1.8	7
sw. 2	sw. 2	sw. 2	sw. 2	sw. 2	sw. 3	sw. 1	sw. 2	sw. 1	sw. 3	2.0	0.9	8
s. 2	s. 2	w. 2	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 1	sw. 2	2.3	1.0	9
s. 3	s. 3	sw. 3	sw. 2	sw. 3	sw. 2	sw. 1	sw. 3	sw. 2	sw. 1	2.6	1.2	10
s. 3	s. 2	sw. 2	sw. 3	sw. 2	w. 2	w. 2	sw. 1	sw. 1	sw. 2	2.3	1.0	11
s. 6	s. 9	se. 3	s. 4	s. 13	s. 13	s. 5	w. 3	s. 2	nw. 1	3.3	1.5	12
sw. 2	sw. 4	sw. 3	sw. 4	nw. 2	sw. 3	nw. 2	nw. 1	sw. 1	nw. 1	2.2	1.0	13
sw. 2	sw. 3	sw. 3	sw. 4	w. 2	nw. 2	sw. 1	sw. 2	o 0	sw. 2	2.1	0.9	14
sw. 3	sw. 1	sw. 1	s. 4	s. 4	sw. 4	s. 3	s. 2	e. 2	e. 4	2.3	1.0	15
sw. 8	s. 10	s. 11	sw. 12	se. 5	s. 9	s. 9	s. 9	se. 8	se. 6	5.2	2.3	16
nw. 5	s. 3	sw. 2	sw. 2	sw. 1	sw. 2	sw. 2	sw. 1	sw. 1	sw. 1	4.8	2.1	17
s. 3	sw. 8	s. 5	sw. 5	sw. 6	sw. 8	se. 9	se. 8	se. 10	sw. 6	4.2	1.9	18
sw. 3	sw. 3	sw. 2	sw. 2	sw. 1	sw. 2	w. 1	w. 2	sw. 1	w. 1	3.5	1.6	19
ne. 34	**ne. 34**	ne. 26	s. 19	sw. 8	w. 4	w. 7	w. 2	w. 2	w. 3	**11.0**	**4.9**	20
nw. 2	nw. 1	w. 2	w. 2	w. 1	w. 2	w. 2	w. 2	w. 3	w. 2	1.8	0.8	21
sw. 8	w. 7	w. 3	nw. 2	w. 4	w. 2	nw. 4	w. 1	sw. 4	s. 4	5.6	2.5	22
sw. 1	sw. 1	sw. 1	sw. 1	o 0	s. 1	s. 1	s. 1	sw. 1	o 0	1.1	0.5	23
nw. 3	sw. 2	w. 3	sw. 6	sw. 2	sw. 2	sw. 2	sw. 1	sw. 1	sw. 2	1.8	0.8	24
w. 3	w. 2	w. 3	sw. 3	sw. 5	sw. 5	sw. 5	sw. 5	sw. 5	sw. 4	6.4	2.9	25
o 0	sw. 1	sw. 2	sw. 2	sw. 2	sw. 2	e. 2	e. 11	e. 17	e. 17	3.1	1.4	26
nw. 1	sw. 2	s. 2	s. 2	s. 4	s. 2	s. 2	s. 1	s. 2	s. 2	7.8	3.5	27
sw. 2	sw. 2	s. 2	s. 2	s. 4	s. 1	s. 4	nw. 4	nw. 2	w. 1	2.5	1.1	28
sw. 3	nw. 4	nw. 5	nw. 3	nw. 4	nw. 4	nw. 3	se. 6	se. 13	se. 11	3.5	1.6	29
sw. 6	nw. 5	sw. 3	s. 4	sw. 6	s. 12	s. 17	sw. 8	nw. 4	nw. 5	8.6	3.8	30
se. 7	se. 4	s. 11	sw. 8	s. 8	s. 17	s. 18	se. 7	se. 5	se. 9	7.9	3.5	31
4.2	4.6	4.2	3.8	3.4	3.8	3.9	3.2	3.4	3.5	3.84	---------	
1.9	**2.1**	1.9	1.7	1.5	1.7	1.7	1.4	1.5	1.6	1.7	1.7	

WIND.

The direction and velocity of the wind at Fort Conger was observed and recorded hourly. The direction was noted only to eight points of the compass, and is in all cases true. The velocity is given in miles per hour, having been recorded in miles actually blown in each hour, as shown by a Robinson anemometer and registered by an electro-circuit, as is customary at Signal Service stations.

The velocity of the wind was measured by a Robinson anemometer, which was situated 31 feet [9.4^m] above the ground, and 50 feet [15^m] above the sea, where it was exposed to the full force of all winds.

The large wind vane, 50 feet [15^m] above the ground, and 71 feet [22^m] above the sea, although carefully mounted, was occasionally so interfered with by frost work, that the vane did not swing with very light winds, consequently the electrical record of directions was not always reliable, and was never used. The observer noted the direction, not only of the large vane, but also of a light vane, which, 10 feet [3^m] above the ground and 60 feet [19^m] above the sea, was situated near the instrument shelter, and at some distance from the house. The two vanes generally accorded, but in difference the direction was determined by the light vane.

The country, as will be observed from the accompanying map, is particularly open from S. to WSW., and moderately so due E. of the station. In other directions the land rises to an elevation of 1,500 to 1,800 feet [450 to 550^m] within 1 or 2 miles of the station.

The configuration of the fiords, valleys, and straits adjacent to Fort Conger is frequently such that the wind blows, as a rule, only from two quarters, up and down, rarely transversely, or quartering, consequently no very great stress can be laid upon either direction or velocity of these observations. It was often noted that a strong NNE. or SSW. wind blew up or down Robeson Channel, while light winds from different quarters were experienced at the station.

The mean hourly velocity of the wind for two years, 1881–'83, was 2.64 miles per hour [1.2^m per second]. It is quite evident that this represents only the movement at Fort Conger, and is far below the velocity in many places. Whether it fairly represents the average movement for the entire country it is impossible to say, but it does not seem probable.

Appreciating the local character of the winds an attempt was made to supplement the station record by other observations.

On October 9, 1881, an anemometer was placed on the summit of Bellot Island, 2 miles SSW. of the station, at an elevation of 1,533 feet [467^m] above the sea.

The regular dials read to 990 miles, but a supplementary dial was made and attached, which enabled readings to 99,800 miles. This anemometer was blown down and badly broken by the violent gale of January 16, 1882, so that only three month's readings are available for comparison.

On March 7, 1882, a Robinson anemometer was exposed on the summit of Dutch Island, a mile and a half south of the station. The instrument was about 25 feet [7.6^m] above the sea, where the exposure was perfectly free from all quarters except NNE., where the ground rose about 1,600 feet [500^m] in a distance of half a mile, but the configuration of the highland is such that it is probable but little wind either from N. or NE. failed to reach Dutch Island.

This instrument was visited almost daily for fourteen months, except August, 1882, and its readings in detailed comparison with those of the Fort Conger anemometer are to be found under miscellaneous observations.

As severe storms at times prevented daily visits, it has been necessary to occasionally interpolate 990 miles, or one complete revolution of the inner dial, to complete the record. Generally the necessity of this interpolation is self-evident, but occasionally it depended on judgment which was based on other knowledge as to light winds in Robeson Channel while light winds prevailed at the station. The tendency in interpolating has been toward reducing rather than toward overestimating the amount of wind at Dutch Island, as is shown by the excess of wind at Dutch Island over Fort Conger, being 25 per cent. greater during periods when there were no interpolations than when interpolations were made.

The interpolations in all cases are designated in the detailed record.

In the spring of 1883 a Robinson anemometer was also placed on the summit of Cairn Hill, about 1,600 feet [500^m] above the level of the sea, which was read occasionally.

These readings, as well as the last readings at Dutch Island, were left at Fort Conger, as the detailed record was too bulky for our limited transportation, and time failed in which to copy them as was done with important observations. As seventeen months' records had been copied, the loss is immaterial.

The following table gives, by months, the results of these observations:

TABLE CXXIX.—*Comparative wind velocities recorded.*

Time.	Miles recorded at—			
Oct. 9 to Oct. 31, 1881	Fort Conger	862	Bellot Island	2,168
Oct. 31 to Dec 1, 1881	do	1,075	do	4,403
Dec. 1 to Jan. 3, 1882	do	598	do	1,201
Total		2,535		7,772
Mar. 7, to Mar. 31, 1882	Fort Conger	482	Dutch Island	2,263
Apr., 1882	do	2,275	do	4,935
May, 1882	do	2,313	do	4,905
June, 1882	do	3,826	do	7,643
July, 1882	do	4,091	do	8,128
Aug., 1882	do	3,831	do	7,685
Sept., 1882	do	2,929	do	5,776
Oct., 1882	do	2,577	do	5,589
Nov., 1882	do	744	do	1,665
Dec., 1882	do	661	do	1,494
Jan., 1883	do	323	do	1,086
Feb., 1883	do	282	do	1,150
Mar., 1883	do	1,763	do	3,099
Apr., 1883	do	1,192	do	1,664
Total		27,289		57,082

From these observations it appears that the wind on the summits of the highlands of Grinnell Land, which average nearly as high as the summit of Bellot Island, is 3.1 greater than at the level of the sea in a comparatively sheltered spot like Conger. It also appears that the velocity at an exposed spot, such as Dutch Island, is 2.1 greater than at Conger.

The mean velocity at the three stations is 2.05 greater than at Conger, substantially that of Dutch Island, so that the values given for Conger should be doubled to correct for local influences. Such correction has in no case been applied.

The mean velocity, October 9, 1881, to January 3, 1882, on the summit of Bellot Island, was 3.7 miles per hour [1.7^{m} per second], which covers three comparatively calm months.

The hourly velocity of Dutch Island, from fourteen months' observation, is entitled to great weight. Its mean is 5.7 miles per hour [2.5^{m} per second], ranging from 11 miles [4.9^{m} per second] in July to 1.5 miles [0.7^{m} per second] in January.

During the absence of the sun calms prevailed at the station on an average seventeen hours daily, while, during the continual sunlight, wind from some quarter was experienced twenty-three hours daily.

February was the month of least wind, 334 miles, against 4,032 miles in June, the windiest month at the station, although it was slightly exceeded at Dutch Island in July.

South winds had the highest velocity, 5.6 miles per hour [2.5^{m} per second], and west winds the least, 2.7 miles per hour [1.2^{m} per second].

The following is a table of winds exceeding 20 miles per hour [8.9^{m} per second], and also the highest wind each month at Fort Conger, from August 11, 1881, to August 9, 1883:

TABLE CXXX.—*High winds at Fort Conger from August,* 1881, *to July, inclusive,* 1883.

$\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^{h} 19^{m}$

Date.	Time.	Registered velocity during 1 hour.			Velocity determined from record of 15 minutes.			Remarks.
		Direction.	Miles per hour.	Meters per second.	Time.	Miles per hour.	Meters per second.	
1881.								
August 11		SW.			1. 35 p. m.	36	16. 1	
August 27		S.						
September 10	9 a. m	N.	30	13. 4	9. 15 p. m.	38	17. 0	
September 12	2 a. m	SW.	21	9. 4	2 a. m	22	9. 8	
October								17 miles per hour [7.6^{m} per second] NE., at 1 a. m., 8th.
November								12 miles an hour [5.4^{m} per second] NE., at 2 a. m., 7th.
December								19 miles an hour [8.5^{m} per second] E., at 4 a. m., 24th.
1882.								
January 16	2.30 p. m	NE.	57	25. 5	2.30 p. m.	63	28. 2	
January 23	2 p. m.	SE.	29	13. 0	1.30 p. m.	34	15. 2	
February								SW. 8 miles per hour [3.6^{m} per second] on the 17th.
March 30	8 p. m.	SE.	20	8. 9	7.45 p. m.	24	10. 7	
April 8	10 p. m.	E.	21	9. 4	9.30 p. m.	24	10. 7	22 miles an hour [9.8^{m} per second] S., at 11 p. m., 22d.
April 23	10 a. m.	S.	25	11. 2	9.50 a. m.	28	12. 5	25 miles an hour [11.2^{m} per second] S., at 5 p. m., 23d.
April 25	5 a. m.	E.	26	11. 6	4.15 a. m.	28	12. 5	
May 8	7 a. m.	E.	21	9. 4	2.45 a. m.	20	8. 9	
May 30		E.			3 a. m.	20	8. 9	
June 20	4 a. m.	S.	24	10. 7	4 a. m.	26	11. 6	
June 28	1 a. m.	SE.	28	12. 5	4 a. m.	26	11. 6	20 miles an hour [8.9^{m} per second] S., at 1 p. m., 29th, and at 11 a. m., 30th.
June 29	3 a. m.	S.	21	9. 4	2.55 a. m.	27	12. 1	
July 7	5 p. m.	SE.	20	8. 9	5 p. m.	21	9. 4	
July 28	7 a. m	SE.	33	14. 8	7 a. m.	36	16. 1	
August 9	10 p. m.	E.	20	8. 9	10 p. m.	22	9. 8	
August 19	12 m.	S	28	12. 5	10.30 p. m.	32	14. 3	
September 6	11 a. m.	N	31	13. 9	10.30 p. m.	34	15. 2	
September 23	4 and 5 a. m 11 p. m.	SW.	22	9. 8		22	9. 8	
October 1	1 and 2 a. m.	E.	32	14. 3		32	14. 3	
October 3	3 a. m.	NE.	33	14. 8	2.55 a. m.	37	16. 5	
October 21	3 a. m.	E.	25	11. 2	5 a. m.	28	12. 5	
November 15	2 p. m.	SE.	22	9. 8	1.15 p. m.	24	10. 7	
December 30	5 p. m	NE.	20	8. 9				
1883.								
January								E. 9 miles an hour [4.0^{m} per second] on 27th.
February								N. 13 miles an hour [5. 8^{m} per second] on 7th.
March 8	9 a. m.	SW.	52	23. 2				
March 15	1 a. m.	S	22	9. 8				
April								15 miles per hour [6.7^{m} per second] SW., at 9 p.m., 20th.
May 14	11 a. m.	NE.	40	17. 9				
May 28	2 a. m.	NE.	24	10. 7	11 a. m	28	12. 5	
May 30	6 a. m. 2 p. m.	S.	23	10. 3	12.30 p. m.	24	10. 7	
May 31	10 a. m.	S.	33	14. 8				
June 1	1 p. m.	S.	22	9. 8	12.45 p. m.	24	10. 7	
June 7	12 m.	S.	26	11. 6	11.30 p. m.	27	12. 1	
June 9	11 a. m.	NE.	28	12. 5		29	13. 0	
June 18	8 p. m.	NE.	25	11. 2				
June 24	10 a. m.	NE.	37	16. 5	9.30 a. m.	42	18. 8	
June 29	10 a. m.	NE.	25	11. 2				
July 20	3 to 4 p. m.	NE.	33	14. 8	3.30 p. m.	36	16. 1	
July 27	4 a. m.	E.	22	9. 8				
August 1	6 a. m.	S.	21	9. 4				

The diurnal variations in velocity are small and probably accidental; for if they are affected by the sun's position the observations are not of sufficient period to show it.

TABLE CXXXI.—*Frequency and velocity of winds at Fort Conger, 1881–1884.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Direction.	August, 1881.		September, 1881.		October, 1881.		November, 1881.		December, 1881.		January, 1882.	
	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.
N.	15½	49	107	734	6	47	19	76	10	33	6	25
NE.	29½	197	132½	511	94	314	64	245	25	86	51	588
E.	24½	97	175	671	146	427	115	350	68	325	44	116
SE.	62½	286	41	128½	105	185	12	26	6	28	37	184
S.	31	91	24½	64½	2	8	9	16	2	3	4	20
SW.	120	319	30	272	7	16	5	15			5	28
W.	23	53	5	61	5	9	6	22	3	13	7	28
NW.	25	63	24	88	8	33	15	33	5	16	7	10
Calm.	74	0	181	235	371	406	475	243	625	93	583	118
	305*	1,155	720	2,765	744	1,445	720	1,026	744	597	744	1,117

Direction.	February, 1882.		March, 1882.		April, 1882.		May, 1882.		June, 1882.		July, 1882.		Total for 1881–'82.	
	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.
N.	10	15	13	34	73	162	100	252	26	69	8	26	393½	1,522
NE.	46	76	70	177	101	269	113	407	27	126	8	65	761	3,061
E.	60	109	105	259	189	635	94	688	76	675	55	491	1,151½	4,843
SE.	24	31	30	84	109	346	57	255	98	899	97	1,153	678½	3,605½
S.	4	11	29	141	78	594	139	598	204	1,421	157	897	683½	3,864½
SW.	4	18	8	48	34	118	57	166	149	382	259	629	678	2,011
W.	1	1	5	22	33	81	77	112	78	191	128	356	371	949
NW.	8	11	10	10	38	66	71	1[illegible]0	56	156	29	115	296	731
Calm.	515	113	474	63	65	7	36	4	6	0	3	0	3,408	1,282
	672	385	744	838	720	2,278	744	2,61[illegible]	720	3,919	744	3,732	8,421	21,869

Direction.	August, 1882.		September, 1882.		October, 1882.		November, 1882.		December, 1882.		January, 1883.	
	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.
N.	12	45	106	798	105	741	26	131	22	104	3	3
NE.	57	124	184	865	98	569	39	115	65	160	49	92
E.	81	482	74	448	164	578	147	293	99	162	87	143
SE.	190	1,493	65	184	29	73	53	113	50	108	29	38
S.	182	1,029	96	330	13	24	33	61	18	67	12	20
SW.	90	244	85	488	13	35	2	6	15	26	1	1
W.	70	187	31	129	6	25	1	1	6	7	2	2
NW.	50	158	31	114	30	137	1	1	12	32	2	2
Calm.	12	0	48	0	286	0	1	24	457	1	559	15
	744	3,762	720	3,356	744	2,182	720	745	744	667	744	316

Direction.	February, 1883.		March, 1883.		April, 1883.		May, 1883.		June, 1883.		July, 1883.		Total for 1882–'83.	
	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.	Times.	Miles.
N.	1	7	46	107	39	72	39	126	20	265	1	2	420	2,401
NE.	71	89	92	218	123	223	156	873	75	1,073	13	212	1,022	4,613
E.	87	95	125	305	271	555	186	528	29	216	19	256	1,369	4,061
SE.	35	52	150	409	84	142	80	310	42	301	55	427	862	3,650
S.	2	4	61	502	14	42	59	486	103	877	182	772	775	4,214
SW.	6	11	28	120	17	60	62	374	258	843	323	851	900	3,059
W.	1	1	22	42	10	19	26	90	103	342	65	152	343	997
NW.	9	16	32	80	28	57	59	130	65	229	68	187	387	1,142
Calm.	460	9	188	1	134	0	77	0	25	0	18	0	2,682	50
	672	284	744	1,784	720	1,170	744	2,917	720	4,146	744	2,859	6,360	24,187

* From 15th three observations missed.

Under calms are entered winds of unknown directions.

It is to be noticed, from Table CVII, that calms prevailed at over one-third of the observations. East winds were most frequent, and these, combined with those from the NE. and SE., prevailed at one-third of the observations, or as often as all the five other winds. Winds from the W. and NW. were the least frequent, though the exposure to the W. was particularly good.

TABLE CXXXII.—*Record of wind velocities at Fort Conger*, 1881–'83.

$\phi = +81° 44'$ $\lambda = -64° 45' = 4^h 19^m$

Months.	Number of hours during which there was recorded—					
	No miles.	1 mile.	2 to 5, inclusive.	6 to 10, inclusive.	11 to 15, inclusive.	Above 15 miles.
1881.						
August	74	82	193	37	16	3
September	44	169	357	99	37	14
October	68	346	291	28	8	3
November	301	205	176	36	2	0
December	550	101	64	16	10	3
1882.						
January	490	139	70	20	5	20
February	425	179	60	8	0	0
March	446	164	89	31	11	3
April	61	204	370	42	16	27
May	37	255	319	63	44	26
June	8	99	386	85	91	51
July	3	105	437	82	79	38
Sums	2,507	2,048	2,812	547	319	188
Percentages	.30	.24	.33	.07	.04	.02

Months.	Number of hours during which there was recorded—					
	No miles.	1 mile.	2 to 5, inclusive.	6 to 10, inclusive.	11 to 15, inclusive.	Above 15 miles.
1882–'83.						
August	12	132	369	111	82	38
September	48	168	329	86	47	42
October	286	159	197	42	23	37
November	394	198	101	17	8	2
December	456	183	83	11	5	6
January	544	143	52	5	------	------
February	451	182	38	1	------	------
March	187	171	335	26	12	13
April	134	286	281	16	3	------
May	77	258	271	58	22	58
June	25	124	355	70	71	75
July	18	138	466	61	38	23
Sums	2,632	2,142	2,877	504	311	294
Percentages	.30	.24	.33	.06	.04	.03
Grand means	.30	.24	.33	.06	.04	.03

The generally light character of the winds is very marked, there being but 6 per centum above 10 miles an hour [4.5^m per second] and 87 per centum calm, or 1 to 5 miles an hour [0.4^m to 2.2^m per second].

DIRECTION OF THE WIND.

The resultants for each of the two years show a remarkable accordance in direction and velocity, being S. 61°.4 E., 7,594 miles, for the first year, and S. 67°.3 E., 6,437 miles, for the second year. These are thus in accord with many other arctic observations, as well as agreeing with the prevailing theory.

ds were most
s often as all
s particularly

recorded—	
15, ive.	Above 15 miles.
32	38
7	42
23	37
8	2
5	6
2	13
3	
2	58
1	75
8	23
1	294
	.03
	.03

hour [4.5^m

4 E., 7,594
other arctic

TABLE CXXXIII.—*Monthly and hourly wind resultants at Fort Conger.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above ground, 31 feet [9.4 meters].

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Time.	August, 1881.	September, 1881.	October, 1881.	November, 1881.	December, 1881.	January, 1882.
1 a. m	S. 67.0 E. 32.5	N. 35.3 E. 50.4	N. 51.4 E. 38.1	N. 69.5 E. 37.2	S. 87.5 E. 15.9	N. 56.8 E. 32.4
2 a. m	N. 89.2 E. 15.0	N. 42.1 E. 41.8	N. 39.6 E. 37.8	N. 76.2 E. 36.8	N. 66.3 E. 19.4	N. 45.0 E. 27.0
3 a. m	S. 16.7 W. 12.2	N. 48.9 E. 39.3	N. 46.5 E. 42.2	N. 66.4 E. 33.0	S. 88.2 E. 21.9	N. 55.5 E. 26.3
4 a. m	N. 40.6 E. 13.0	N. 32.0 E. 56.7	N. 69.9 E. 30.2	N. 63.8 E. 37.2	N. 76.9 E. 29.5	N. 45.0 E. 13.0
5 a. m	N. 80.7 E. 13.6	N. 29.4 E. 91.8	S. 87.0 E. 29.2	N. 69.2 E. 35.0	N. 88.1 E. 20.7	N. 8.6 E. 9.1
6 a. m	S. 72.6 W. 6.7	N. 34.4 E. 83.3	N. 88.4 E. 22.2	N. 74.6 E. 28.3	N. 84.6 E. 22.2	N. 33.7 E. 7.2
7 a. m	S. 24.7 W. 22.0	N. 44.0 E. 76.7	S. 84.7 E. 23.7	N. 66.9 E. 32.6	N. 90.0 E. 24.0	S. 45.0 W. 3.0
8 a. m	S. 81.9 W. 12.7	N. 30.9 E. 58.6	S. 76.9 E. 25.2	N. 67.4 E. 34.9	N. 77.4 E. 23.8	S. 56.3 E. 5.0
9 a. m	S. 52.8 W. 3.1	N. 11.0 E. 69.5	S. 84.1 E. 28.3	N. 26.6 E. 8.9	N. 45.0 E. 9.0	S. 73.3 E. 8.4
10 a. m	N. 90.0 E. 2.8	N. 21.1 E. 70.6	N. 88.7 E. 31.7	N. 61.8 E. 22.5	N. 62.1 E. 17.3	S. 50.2 E. 10.9
11 a. m	S. 23.4 W. 14.6	N. 36.9 E. 39.3	S. 82.2 E. 42.5	N. 87.8 E. 18.4	N. 33.7 E. 7.9	S. 8.6 W. 7.2
Noon	S. 33.3 W. 7.7	N. 41.3 E. 41.7	S. 84.0 E. 40.4	N. 66.8 E. 9.1	N. 76.4 E. 14.9	N. 58.6 E. 38.0
1 p. m	S. 19.5 E. 16.8	N. 35.3 E. 13.5	N. 81.4 E. 25.5	N. 36.2 E. 14.9	N. 65.8 E. 12.0	N. 56.1 E. 57.0
2 p. m	S. 41.0 E. 22.3	N. 80.3 E. 32.6	N. 78.0 E. 13.5	N. 47.4 E. 16.6	N. 77.7 E. 13.1	N. 69.8 E. 72.8
3 p. m	S. 6.6 W. 33.0	N. 74.4 E. 42.9	N. 84.9 E. 32.8	N. 51.6 E. 12.4	N. 90.0 E. 22.0	N. 67.3 E. 75.2
4 p. m	S. 19.0 W. 23.9	N. 79.4 E. 53.1	N. 82.8 E. 33.3	N. 33.9 E. 14.7	S. 60.7 E. 13.1	N. 76.6 E. 50.7
5 p. m	S. 14.7 W. 17.4	S. 83.2 E. 61.4	N. 89.0 E. 41.5	N. 57.1 E. 18.2	N. 88.7 E. 30.3	N. 73.6 E. 50.2
6 p. m	S. 23.7 E. 14.4	N. 53.5 E. 46.8	N. 88.6 E. 32.8	N. 54.8 E. 17.4	N. 78.7 E. 25.5	N. 73.8 E. 53.4
7 p. m	S. 9.2 W. 33.1	N. 57.7 E. 41.9	N. 62.0 E. 28.5	N. 79.9 E. 24.5	N. 86.2 E. 15.0	N. 83.3 E. 42.0
8 p. m	S. 7.9 W. 11.0	N. 46.9 E. 25.6	N. 81.3 E. 42.3	N. 57.0 E. 12.3	N. 66.1 E. 8.6	S. 84.8 E. 19.9
9 p. m	S. 42.4 E. 15.7	N. 44.5 E. 33.9	N. 81.8 E. 29.5	N. 88.2 E. 26.0	N. 29.1 E. 10.3	N. 58.0 E. 25.1
10 p. m	S. 55.8 E. 17.3	N. 52.5 E. 38.8	N. 59.2 E. 34.0	N. 48.4 E. 16.9	N. 20.8 E. 12.4	N. 38.6 E. 25.2
11 p. m	S. 39.1 E. 46.6	N. 52.7 E. 64.6	N. 79.1 E. 41.3	N. 57.6 E. 24.6	N. 72.0 E. 14.3	N. 51.1 E. 29.3
Midnight	S. 68.3 E. 25.7	N. 50.1 E. 42.9	N. 81.2 E. 41.0	N. 61.1 E. 30.0	N. 90.0 E. 8.0	N. 51.8 E. 25.2
	S. 22.0 E. 308.4	N. 44.9 E. 1143.7	N. 79.1 E. 749.8	N. 64.9 E. 536.3	N. 77.8 E. 390.0	N. 65.4 E. 667.6

Time.	August, 1882.	September, 1882.	October, 1882.	November, 1882.	December, 1882.	January, 1883.
1 a. m	S. 32.7 E. 90.5	N. 49.6 E. 57.9	N. 56.6 E. 105.4	N. 63.1 E. 14.1	S. 74.3 E. 6.6	S. 67.6 E. 3.7
2 a. m	S. 42.0 E. 115.0	N. 37.7 E. 57.9	N. 60.6 E. 102.6	N. 55.2 E. 16.8	N. 35.7 E. 7.0	S. 41.6 E. 7.2
3 a. m	S. 37.7 E. 120.9	N. 63.5 E. 42.8	N. 67.6 E. 93.9	N. 52.0 E. 19.8	N. 16.5 E. 9.2	S. 67.3 E. 6.0
4 a. m	S. 27.2 E. 82.9	N. 60.7 E. 53.9	N. 54.4 E. 110.5	N. 57.8 E. 16.0	N. 75.6 E. 12.5	S. 72.4 E. 4.3
5 a. m	S. 40.5 E. 112.6	N. 51.6 E. 59.2	N. 21.0 E. 81.7	N. 68.0 E. 22.4	N. 42.0 E. 13.6	N. 81.9 E. 9.9
6 a. m	S. 31.0 E. 116.2	N. 45.0 E. 72.0	N. 12.9 E. 79.1	N. 63.4 E. 19.2	N. 81.1 E. 18.7	N. 90.0 E. 7.6
7 a. m	S. 30.3 E. 121.4	N. 42.2 E. 53.0	N. 44.8 E. 75.8	N. 53.8 E. 17.5	S. 31.7 E. 14.1	N. 81.9 E. 2.8
8 a. m	S. 29.0 E. 140.7	N. 31.2 E. 52.9	N. 29.9 E. 67.8	N. 43.6 E. 23.9	N. 45.6 E. 14.3	N. 90.0 E. 7.2
9 a. m	S. 28.3 E. 118.8	N. 39.8 E. 37.2	N. 26.8 E. 60.0	S. 64.6 E. 22.8	N. 38.8 E. 9.1	S. 83.4 E. 6.1
10 a. m	S. 27.1 E. 119.9	N. 7.1 E. 34.1	N. 28.9 E. 62.7	S. 82.5 E. 15.3	S. 74.9 E. 11.9	N. 80.2 E. 5.9
11 a. m	S. 21.1 E. 122.7	N. 8.6 E. 34.8	N. 33.3 E. 64.3	N. 84.8 E. 23.2	S. 74.7 E. 23.9	N. 79.3 E. 18.8
Noon	S. 12.3 E. 137.5	N. 20.1 E. 44.0	N. 25.5 E. 56.7	S. 87.5 E. 31.7	S. 83.9 E. 18.7	N. 86.8 E. 12.7
1 p. m	S. 10.3 E. 105.3	N. 29.7 E. 63.3	N. 55.0 E. 47.7	S. 66.8 E. 22.8	S. 81.5 E. 23.9	N. 86.5 E. 11.5
2 p. m	S. 10.1 E. 81.8	N. 67.3 E. 32.4	N. 56.5 E. 44.7	S. 72.6 E. 43.1	S. 75.2 E. 25.0	N. 70.0 E. 9.0
3 p. m	S. 1.6 E. 92.6	N. 9.1 E. 17.1	N. 63.6 E. 34.6	S. 73.8 E. 17.6	N. 77.6 E. 29.4	N. 77.0 E. 18.7
4 p. m	S. 13.7 E. 91.7	N. 58.8 E. 30.9	N. 53.7 E. 44.1	S. 82.4 E. 15.1	N. 70.9 E. 15.6	N. 71.6 E. 19.0
5 p. m	S. 43.3 E. 75.6	N. 59.6 E. 57.9	N. 50.2 E. 29.4	S. 85.4 E. 12.4	N. 63.2 E. 26.8	N. 69.3 E. 16.1
6 p. m	S. 56.0 E. 86.0	N. 45.5 E. 33.9	N. 24.8 E. 40.2	S. 76.8 E. 14.0	N. 21.6 E. 19.3	N. 87.7 E. 12.5
7 p. m	S. 32.0 E. 69.7	N. 6.9 W. 19.2	N. 43.5 E. 43.9	S. 86.2 E. 25.8	N. 43.6 E. 17.0	N. 83.9 E. 18.9
8 p. m	S. 39.8 E. 74.4	N. 11.3 W. 16.3	N. 19.5 E. 58.9	S. 88.2 E. 21.7	N. 30.4 E. 14.0	N. 73.6 E. 12.4
9 p. m	S. 41.6 E. 79.5	N. 17.3 E. 16.4	N. 16.8 E. 59.2	S. 85.0 E. 17.4	S. 87.6 E. 4.8	S. 81.9 E. 9.9
10 p. m	S. 44.7 E. 72.8	N. 10.8 E. 22.4	N. 23.2 E. 51.3	N. 68.6 E. 25.5	S. 59.8 E. 16.1	N. 80.0 E. 8.6
11 p. m	S. 40.9 E. 75.2	N. 53.6 E. 37.8	N. 4.2 E. 51.0	N. 53.1 E. 16.1	S. 50.3 E. 9.2	N. 81.2 E. 7.2
Midnight	S. 43.4 E. 75.7	N. 86.3 E. 73.7	N. 11.1 E. 61.4	N. 36.8 E. 19.9	N. 32.6 E. 13.2	N. 63.4 E. 2.2
	S. 29.8 E. 2320.2	N. 42.8 E. 934.2	N. 37.8 E. 1443.3	N. 81.4 E. 453.2	N. 76.1 E. 312.6	N. 84.6 E. 233.4

TABLE CXXXIII.—*Monthly and hourly wind resultants at Fort Conger, 1881–'83.*

Washington mean time. Reduce to local mean time by adding 49^m

Anemometer above ground, 31 feet [9.4 meters].

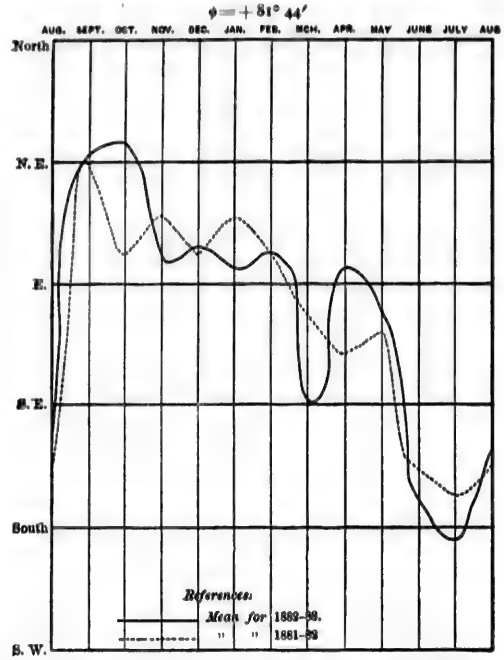
$\phi = + 81^\circ 44'$ $\lambda = - 64^\circ 45' = - 4^h 19^m$

February, 1882.	March, 1882.	April, 1882.	May, 1882.	June, 1882.	July, 1882.	Yearly.	Time.
N. 30.3 E. 5.6	N. 52.9 E. 27.7	S. 61.2 E. 57.7	N. 60.4 E. 45.9	S. 21.9 E. 84.3	S. 38.0 E. 79.5	S. 83.3 E. 360.8	1 a. m.
S. 26.6 W. 4.5	N. 65.6 E. 10.4	S. 37.7 E. 50.3	N. 55.3 E. 60.2	S. 23.2 E. 67.2	S. 17.6 E. 90.8	S. 78.7 E. 292.8	2 a. m.
S. 68.6 E. 4.9	S. 51.9 E. 15.2	S. 28.6 E. 43.6	S. 77.4 E. 45.7	S. 32.3 E. 79.0	S. 27.3 E. 83.7	S. 66.0 E. 321.1	3 a. m.
N. 65.7 E. 6.8	S. 45.0 E. 4.2	S. 24.4 E. 53.4	N. 72.3 E. 43.2	S. 40.3 E. 93.4	S. 13.3 E. 72.1	S. 73.8 E. 290.3	4 a. m.
N. 69.8 E. 10.1	S. 61.7 E. 37.5	S. 63.8 E. 46.2	N. 51.4 E. 54.5	S. 38.7 E. 75.6	S. 19.6 E. 102.2	S. 81.0 E. 354.8	5 a. m.
N. 79.3 E. 11.3	S. 80.8 E. 32.4	S. 64.6 E. 50.4	N. 72.7 E. 37.7	S. 21.2 E. 77.6	S. 16.5 E. 118.2	S. 68.6 E. 323.1	6 a. m.
S. 76.0 E. 2.5	S. 72.8 E. 20.0	N. 88.0 E. 48.5	S. 56.1 E. 43.4	S. 24.4 E. 79.2	S. 14.5 E. 104.4	S. 61.3 E. 331.5	7 a. m.
N. 80.5 E. 4.2	S. 78.0 E. 23.6	N. 77.9 E. 51.6	S. 28.7 E. 38.9	S. 19.7 E. 69.8	S. 0.6 W. 102.5	S. 58.9 E. 262.5	8 a. m.
S. 78.7 E. 10.7	S. 41.1 E. 23.0	S. 82.4 E. 50.3	S. 13.9 E. 27.1	S. 9.0 E. 85.1	S. 8.6 E. 79.3	S. 51.8 E. 222.6	9 a. m.
N. 77.7 E. 6.6	S. 62.7 E. 23.3	S. 26.8 E. 43.5	S. 69.3 E. 28.9	S. 8.5 E. 111.5	S. 6.2 E. 116.4	S. 44.8 E. 280.4	10 a. m.
N. 85.4 E. 8.7	S. 54.9 E. 18.1	S. 35.6 E. 31.1	S. 0.9 E. 33.1	S. 10.1 E. 115.3	S. 8.5 E. 103.4	S. 30.4 E. 314.4	11 a. m.
N. 66.0 E. 7.9	N. 75.4 E. 12.5	S. 11.0 W. 6.3	S. 21.0 E. 47.4	S. 3.8 E. 112.0	S. 25.7 E. 103.0	S. 46.2 E. 290.0	Noon.
N. 72.4 E. 9.2	N. 68.8 E. 24.6	S. 77.9 E. 16.7	S. 9.0 E. 35.3	S. 15.0 E. 127.9	S. 1.4 W. 85.3	S. 45.4 E. 266.8	1 p. m.
N. 90.0 E. 7.0	N. 79.3 E. 18.8	S. 36.8 E. 34.9	S. 43.3 E. 28.7	S. 27.0 E. 122.7	S. 3.7 E. 87.0	S. 53.1 E. 351.2	2 p. m.
N. 65.9 E. 5.1	S. 84.6 E. 13.8	S. 25.9 E. 34.1	S. 42.0 E. 40.4	S. 18.3 E. 117.4	S. 2.3 W. 76.8	S. 49.2 E. 350.7	3 p. m.
S. 86.3 E. 10.7	N. 46.3 E. 12.7	S. 36.0 E. 41.8	S. 39.4 E. 77.3	S. 23.8 E. 112.8	S. 30.6 E. 83.8	S. 52.5 E. 413.2	4 p. m.
N. 90.0 E. 5.8	S. 35.7 E. 7.9	S. 41.3 E. 32.6	S. 24.0 E. 37.6	S. 13.4 E. 100.8	S. 17.8 E. 92.0	S. 49.4 E. 383.1	5 p. m.
N. 65.4 E. 11.8	S. 78.5 E. 10.5	S. 51.3 E. 36.3	S. 56.1 E. 43.4	S. 27.7 E. 105.7	S. 2.8 E. 85.7	S. 59.2 E. 347.8	6 p. m.
N. 71.9 E. 10.9	S. 51.2 E. 9.2	S. 52.2 E. 38.6	S. 72.6 E. 27.1	S. 21.3 E. 108.9	S. 8.9 E. 110.7	S. 49.0 E. 353.4	7 p. m.
N. 70.7 E. 8.2	S. 60.2 E. 26.5	S. 70.2 E. 55.8	S. 81.0 E. 58.4	S. 29.6 E. 86.8	S. 1.5 E. 87.3	S. 57.6 E. 335.2	8 p. m.
N. 85.0 E. 10.3	S. 65.5 E. 15.0	S. 65.4 E. 62.8	S. 80.0 E. 76.8	S. 13.8 E. 58.4	S. 19.6 E. 42.6	S. 71.4 E. 317.7	9 p. m.
N. 46.3 E. 6.1	S. 54.3 E. 15.8	N. 84.0 E. 86.1	N. 79.1 E. 41.2	S. 38.9 E. 89.6	S. 24.8 E. 76.2	S. 81.7 E. 341.2	10 p. m.
N. 74.9 E. 6.5	N. 45.4 E. 18.5	S. 51.7 E. 72.8	N. 85.2 E. 52.8	S. 28.2 E. 100.6	S. 22.0 E. 45.3	S. 73.6 E. 388.4	11 p. m.
S. 62.4 E. 4.7	N. 81.1 E. 14.9	S. 74.7 E. 55.0	N. 71.2 E. 78.8	S. 29.8 E. 70.6	S. 3.5 E. 69.8	S. 79.0 E. 344.0	Midnight.
N. 79.3 E. 166.0	S. 79.9 E. 386.5	S. 64.0 E. 1033.5	S. 72.4 E. 875.5	S. 21.9 E. 2218.6	S. 13.2 E. 2058.0	S. 61.42 E. 7593.6	

February, 1883.	March, 1883.	April, 1883.	May, 1883.	June, 1883.	July, 1883.	Yearly.	Time.
N. 87.0 E. 13.3	S. 32.4 E. 29.5	N. 77.0 E. 42.7	N. 64.4 E. 91.4	S. 20.3 W. 39.1	S. 22.5 W. 63.4	S. 81.5 E. 312.8	1 a. m.
S. 80.8 E. 8.7	S. 81.0 E. 13.5	S. 84.3 E. 36.8	N. 68.6 E. 82.4	S. 2.6 W. 35.4	S. 7.7 E. 55.1	S. 82.0 E. 374.6	2 a. m.
N. 42.7 E. 10.5	N. 84.2 E. 19.7	S. 83.6 E. 38.3	S. 71.4 E. 67.1	S. 72.9 W. 8.2	S. 14.3 E. 73.9	S. 72.7 E. 379.9	3 a. m.
N. 90.0 E. 5.4	N. 88.7 E. 18.2	S. 79.0 E. 49.6	S. 56.7 E. 50.3	N. 52.8 W. 24.8	S. 2.0 E. 63.0	S. 79.2 E. 305.8	4 a. m.
N. 74.4 E. 7.8	S. 64.3 E. 21.0	N. 66.9 E. 21.6	S. 76.4 E. 39.9	S. 52.2 W. 45.2	S. 11.7 E. 50.6	S. 80.9 E. 252.5	5 a. m.
S. 61.7 E. 4.4	S. 85.6 E. 21.0	S. 77.6 E. 19.1	S. 82.4 E. 33.8	S. 79.6 E. 38.4	S. 15.7 E. 44.5	S. 85.4 E. 264.2	6 a. m.
N. 58.8 E. 13.7	S. 57.0 E. 31.4	S. 84.8 E. 25.4	S. 57.5 E. 47.8	S. 38.7 E. 26.9	S. 14.5 W. 60.4	S. 65.6 E. 317.6	7 a. m.
N. 45.0 E. 5.0	S. 32.0 E. 50.2	N. 73.6 E. 26.3	S. 29.5 E. 42.4	S. 81.5 E. 19.0	S. 20.7 W. 82.1	S. 58.6 E. 270.4	8 a. m.
N. 69.1 E. 5.9	S. 0.1 W. 52.7	N. 71.4 E. 23.2	S. 53.9 E. 62.1	S. 45.8 E. 40.3	S. 0.8 W. 64.5	S. 51.4 E. 304.0	9 a. m.
N. 70.4 E. 6.3	S. 28.4 E. 65.7	N. 66.6 E. 25.4	S. 63.0 E. 56.7	S. 83.3 E. 65.5	S. 6.6 E. 61.0	S. 61.5 E. 339.9	10 a. m.
S. 67.0 E. 7.2	S. 36.3 E. 54.0	N. 86.6 E. 15.3	N. 84.8 E. 56.8	N. 82.9 E. 12.9	S. 6.3 E. 58.2	S. 56.1 E. 305.2	11 a. m.
N. 82.2 E. 5.2	S. 33.6 E. 51.5	N. 84.9 E. 24.9	N. 84.4 E. 49.0	S. 24.2 E. 38.3	S. 20.0 E. 72.6	S. 56.9 E. 333.4	Noon.
S. 76.4 E. 11.9	S. 29.2 E. 52.5	N. 62.9 E. 20.2	S. 64.4 E. 60.6	S. 17.1 W. 46.6	S. 2.4 E. 62.1	S. 49.6 E. 301.7	1 p. m.
S. 61.7 E. 5.9	S. 32.2 E. 49.0	N. 61.8 E. 19.1	S. 18.8 E. 23.0	S. 2.3 E. 19.8	S. 11.7 E. 47.2	S. 50.5 E. 286.7	2 p. m.
S. 83.2 E. 5.9	S. 40.5 E. 54.0	N. 75.9 E. 17.6	S. 84.2 E. 16.8	S. 15.3 E. 14.0	S. 24.3 W. 38.4	S. 48.8 E. 216.5	3 p. m.
N. 47.9 E. 8.4	S. 58.1 E. 28.6	N. 65.4 E. 18.7	S. 90.0 E. 34.7	S. 1.6 E. 17.7	S. 10.1 W. 43.8	S. 77.7 E. 139.0	4 p. m.
N. 70.2 E. 8.3	S. 44.6 E. 43.6	N. 70.4 E. 20.8	S. 84.8 E. 26.7	S. 66.0 W. 19.7	S. 2.5 W. 50.5	S. 72.9 E. 242.0	5 p. m.
N. 77.0 E. 8.0	S. 75.9 E. 25.9	N. 82.5 E. 25.3	S. 38.8 E. 20.1	S. 13.1 W. 28.3	S. 36.6 W. 69.4	S. 59.1 E. 179.3	6 p. m.
N. 67.6 E. 9.2	S. 60.7 E. 36.1	N. 89.5 E. 34.4	S. 69.4 E. 37.5	S. 17.3 E. 78.1	S. 36.3 W. 80.1	S. 55.6 E. 250.4	7 p. m.
N. 76.1 E. 8.8	S. 47.1 E. 30.8	S. 74.8 E. 31.6	S. 84.5 E. 34.6	S. 44.2 E. 42.0	S. 30.1 W. 92.4	S. 58.9 E. 215.0	8 p. m.
N. 72.1 E. 6.8	S. 47.0 E. 28.6	S. 87.4 E. 46.6	S. 82.2 E. 42.3	S. 30.6 W. 28.5	S. 21.8 W. 81.0	S. 56.7 E. 222.0	9 p. m.
N. 74.4 E. 7.8	S. 61.7 E. 39.3	N. 81.3 E. 56.0	N. 23.5 E. 20.4	S. 27.7 E. 22.4	S. 13.6 W. 49.7	S. 81.0 E. 229.9	10 p. m.
N. 90.0 E. 6.8	S. 73.2 E. 19.7	N. 75.9 E. 55.7	N. 44.0 E. 41.3	S. 8.7 E. 33.0	S. 11.9 E. 47.4	S. 85.1 E. 234.1	11 p. m.
N. 65.0 E. 5.0	S. 81.4 E. 18.8	N. 75.6 E. 39.8	N. 39.0 E. 20.3	S. 15.8 W. 22.4	S. 4.4 W. 40.0	S. 88.9 E. 225.6	Midnight.
N. 78.3 E. 175.3	S. 45.3 E. 794.2	N. 83.2 E. 716.1	S. 81.7 E. 928.0	S. 9.9 E. 507.9	S. 37.5 W. 6565.4	S. 67.3 E. 6436.9	

The resultant wind in summer remains remarkably steady from the SSE., having the greatest southerly component, S. 16° E., in June. In autumn it backs suddenly to NE., and thence gradually veers to the southward through winter and spring, as shown by the following diagram:

CHART No. 12.—*Annual fluctuation in direction of wind at Fort Conger*, 1881-'83.



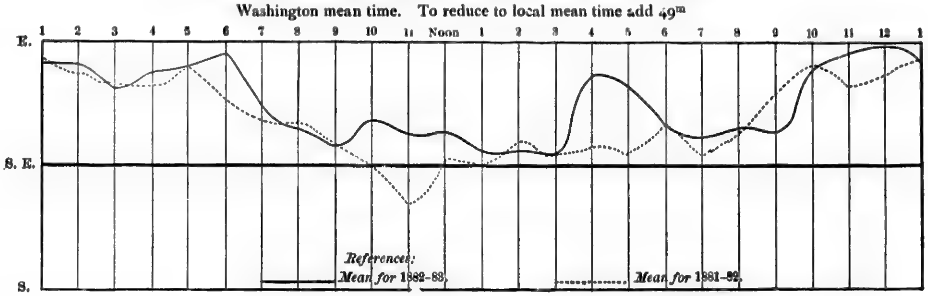
ANNUAL FLUCTUATION OF THE DIRECTION OF THE WIND.

The annual fluctuation of the direction of the wind is shown, perhaps, more decidedly by an examination of the table of frequency than by the resultants. From October to April, inclusive, the winds largely predominate from the E. quadrant, but in May they incline towards the SE. From June to August, inclusive, southerly winds strongly prevail, with a tendency, however, to the SW. quadrant in July. September, with the departing sun, finds them backing sharply to the NE.

By Table 133 it will be seen that the resultant from 10 a. m. (10.49 a. m. local mean time) to 3 p. m. (3.49 p. m. local mean time) had a decidedly greater southerly component than at other times, while from 10 p. m. (10.49 p. m. local mean time) to 2 a. m. (2.49 a. m. local mean time) opposite conditions prevailed. This might be accidental during one year, but its repetition the second year apparently shows a decided influence of the sun on the diurnal variation of the wind's direction.

CHART No. 13.—*Diurnal fluctuation in dire tion of wind at Fort Conger*, 1881-'83.

Washington mean time. To reduce to local mean time add 49^m



STORMS AT FORT CONGER.

It is difficult to determine the exact amount of atmospheric disturbance which should be considered a storm.

The following list of storms comprises all cases when: 1st, the wind has blown 20 miles per hour* [8.9^{m} per second] or more in a single hour; 2d, when the barometer has changed over .060 inch [1.52^{mm}] in a single hour, and the change is in accord with other meteorological conditions; 3d, if the daily barometric range exceeds .400 inch [10.16^{mm}] during the day.

In quite a number of cases two or more of these conditions obtain as well as rain or snow and sudden changes of temperature.

It is evident, however, that some of these changes occur without storm conditions prevailing—as, for instance, February 5, 6, and 7, 1882, September 19, 1882, February 7–8 and 24, April 22, 1883.

List of storms at Fort Conger, 1881–'83.

$\phi = +81^{\circ}\ 44'$ $\lambda = -64^{\circ}\ 45' = -4^{h}\ 19^{m}$

Date.	Wind and velocity.			Hourly changes of barometer.		Daily range of barometer.		Remarks.
	Direction.	Miles per hour.	Meters per second.	Inches.	Millimeters.	Inches.	Millimeters.	
1881.								
Aug. 11	SW.	36	16.1					Strong gale.
Sept. 10	N.	30	13.4	— .09	— 2.29	— .470	— 11.94	Strong gale. Sudden changes of temperature.
12	SW.	21	9.4	+ .10	+ 2.54			
Dec. 31						— .419	— 10.64	Temperature rose 22°.1 [12°.28 C.] in 12 hours.
1882.								
Jan. 2						+ .404	+ 10.26	
15				+ .06	+ 1.52	+ .394	+ 10.01	
16	NE.	57	25.5	+ .11	+ 2.79	— .861	— 21.87	Temperature rose 10°.3 [5°.27 C.] in an hour.
17						+ .632	+ 16.05	
23	SE.	29	13.0	— .03	— 0.76			Temperature rose 10°.8 [6°.00 C.] in an hour.
Feb. 5						+ .460	+ 11.68	
6						— .404	— 10.26	
7						— .425	— 10.80	
15						— .465	— 11.81	
24						— .488	— 12.39	
March 2						— .541	— 13.75	
3						+ .656	+ 16.66	Heavy snow.
21						— .427	— 10.85	
29	SE.	20	8.9			— .464	— 11.78	
30	SE.	20	8.9	+ .08	+ 2.03	+ .789	+ 20.04	Sudden changes of temperature.
April 8	E.	21	9.4			+ .616	+ 15.64	
10						— .417	— 10.59	
21	S.	21	9.4			— .468	— 11.88	Do.
22	S.	22	9.8					
23	S.	25	11.2					
25	E.	25	11.2					
May 8	E.	21	9.4					Heavy snow.
June 20	S.	24	10.7					Strong wind all day in Robeson Channel.
28	SE.	24	10.7					Strong winds for all these days. Breaking of ice in Robeson Channel commencing.
29	S.	20	8.9					
30	S.	20	8.9					
July 7	SE.	20	8.9					Strong wind. Robeson Channel breaking up.
28	SE.	33	14.8					Very heavy SE. gale in straits; wind 48 miles per hour [21.5^{m} per second] on Cairn Hill at 10 a. m. on 28th.
29	SE.	33	14.8			+ .480	+ 12.19	
Aug. 9	E.	20	8.9					Heavy snow.
19	S.	28	12.5					Strong wind nearly all day.
Sept. 6	N.	31	13.9					Violent northerly gale in Robeson Channel.
9						— .425	— 10.80	Clear and fine.
23	SW.	22	9.8					
Oct. 1	E.	32	14.3					
2	N.	20	8.9					
3	NE.	33	14.8					
21	E.	25	11.2					Heavy snow.

*Owing to the sheltered position of Conger this velocity of 20 miles per hour may be considered to far exceed an hourly velocity of 25 miles [11.2^{m} per second], as determined from fifteen minutes record, which was the standard for storms in use for years by the U. S. Signal Service.

List of storms at Fort Conger, 1881–'83—Continued.

Date.	Wind and velocity.			Hourly changes of barometer.		Daily range of barometer.		Remarks.
	Direction.	Miles per hour.	Meters per second.	Inches.	Millimeters.	Inches	Millimeters.	
1881.								
Nov. 25	SE.	22	9.8					
Dec. 17						— .451	— 11.46	Fine weather.
20						+ .446	+ 11.33	Heavy snow.
30	NE.	20	8.9					Very high wind considering the temperature, — 17°.0 [— 27°.2 C.].
1883.								
Jan. 4				— .06	— 1.52	— .480	— 12.19	Fine weather.
22						— .464	— 11.78	Heavy snow.
Feb. 3				— .10	— 2.54			Followed by heavy snow.
7				+ .06	+ 1.52			
8						— .664	— 16.86	Fine weather.
24						+ .468	+ 11.88	Do.
March 2						+ .531	+ 13.49	Heavy snow.
4						+ .520	+ 13.21	Do.
8	SW.	52	23.2	+ .08	+ 2.03	+ .665	+ 16.89	Heavy snow and sudden changes in temperature.
10						+ .485	+ 12.32	
11				+ .07	+ 1.78			
12						+ .479	+ 12.17	
14				+ .05	+ 1.27			Light snow. Sudden changes of temperature.
15	S.	22	9.8	+ .05	+ 1.27	+ .460	+ 11.68	Do.
21				— .08	— 2.03	— .674	— 17.12	Heavy snow.
22				+ .05	+ 1.27	+ .588	+ 14.93	Do.
23	SE.	17	7.6			+ .481	+ 12.22	Do.
April 22						+ .433	+ 11.00	Fine weather.
May 14	NE.	40	17.9					Heavy snow. Strong gale in Robeson Channel.
28	NE.	24	10.7					Heavy snow.
30	SE. S.	23 23	10.3 10.3					Heavy snow. Strong wind in Robeson Channel.
31	S.	33	14.8					Do.
June 1	S.	22	9.8					Do.
7	S.	26	11.6					
9	NE.	28	12.5					
18	NE. NE.	20 25	8.9 11.2					Strong wind all day.
23	NE.	22	9.8					Strong northerly gale in Robeson Channel.
24	NE. NE.	*42 37	18.8 16.5					Do.
29	NE.	25	11.2					Strong wind most of day.
July 20	NE.	34	15.2					Wind strong most of day; velocity for 15 minutes, 40 miles per hour [17.9^{m} per second].
27	E.	22	9.8					Heavy snow and rain.
Aug. 1	S.	21	9.4					Light rain.

* For 15 minutes.

The storm of January 16, 1882, was the most violent experienced in our three years' service, and from extraneous evidence was the most violent since Fort Conger was last visited in 1876.

A remarkably severe storm prevailed at Point Barrow also on days immediately preceding, which undoubtedly proceeded from the same area of low pressure.

At Point Barrow, on January 11, ENE. winds of a mean hourly velocity of 25.3 miles per hour [11.3^{m} per second] prevailed, and the barometer fell .163 inch [4.14^{mm}]. The next day the wind veered slowly to the SSW. with a mean hourly velocity of 34 miles [15.2^{m} per second], and the barometer fell .555 inch [14.10^{mm}] in eleven hours, to 28.266 [719.94^{mm}] at noon. The wind veered to the W. on the 13th and blew steadily all day from 45 to 52 miles an hour [20.1^{m} to 23.2^{m} per second], while the barometer in 59 hours rose 2.277 inches [57.84^{mm}] to 30.543 [775.78^{mm}] at 11 p. m. January 14.

At Fort Conger the barometer fell quite steadily from 30.035 [762.88^{mm}] on the 11th, to 29.245 [742.83^{mm}] on the 14th, and then rose very slowly to 29.881 [758.97^{mm}] at 1 a. m. 16th, with no evidences of a serious disturbance. At 6 a. m. of the 16th, however, the barometer commenced falling very rapidly, and at 3 p. m. touched 29.028 [737.29^{mm}], a change of 0.752 inch [19.10^{mm}] in 9 hours.

The early morning had been calm, but at 9 a. m. a wind of SW., 4 miles per hour [1.8^{m} per second], sprang up, which changed sharply to a strong NE. gale at noon, and at 2.15 p. m. had reached a velocity of NE. 65 miles per hour [29.1^{m} per

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Chart 15.

ISOBARS FROM INTERNATIONAL AND POLAR OBSERVATIONS. MARCH 8, 1883, 12.8 P. M. GREENWICH TIME.

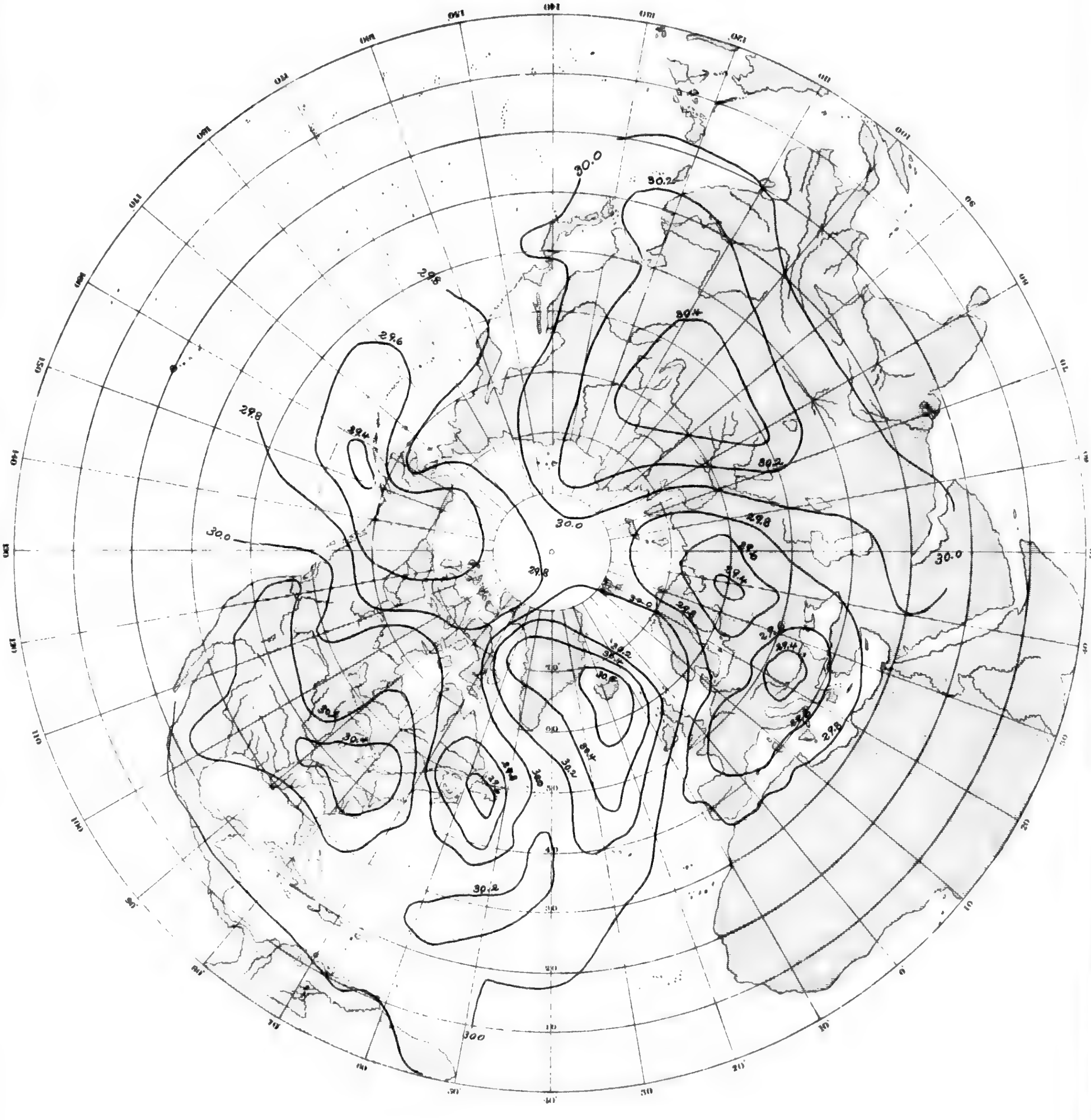
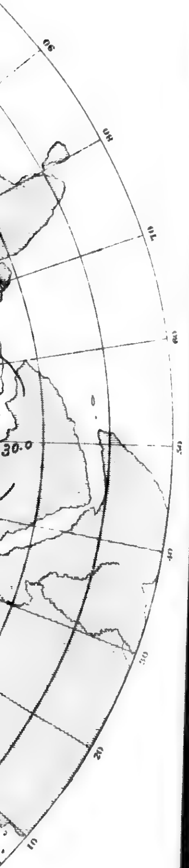
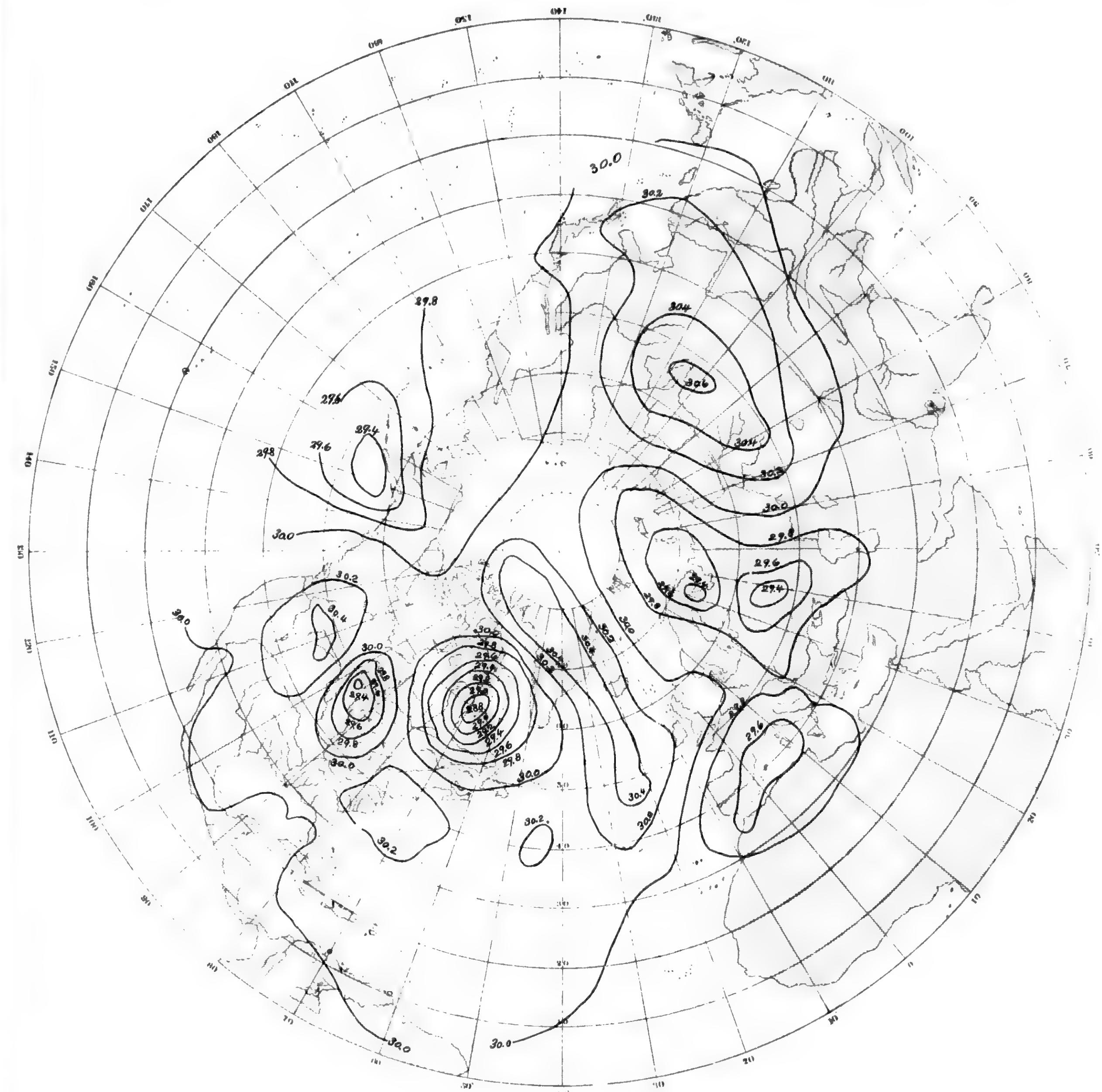


CHART 15.

H 8, 1883,



ISOBARS FROM INTERNATIONAL AND POLAR OBSERVATIONS. MARCH 9, 1883, 12.8 P. M. GREENWICH TIME.



second]. At 2.30 p. m. the anemometer broke, so that the later wind, which probably reached 100 miles an hour [44.7^{m} per second] was necessarily estimated. For nearly two hours it seemed possible that the whole house would blow into the bay, and despite the energy of the stoutest men no one could reach the thermometers until 5 p. m. On January 17 the wind gradually died away and the barometer rose 0.632 inch [16.05^{mm}].

The storm of March 8, 1883, was quite violent and of brief duration. "The wind," says my journal, which at 6 a. m. had been blowing at the rate of N. 2 miles per hour [0.9^{m} per second] changed suddenly at 6.35 to S., and increased to 34 miles an hour [15.2^{m} per second]. After 7 a. m. it increased in violence, but the drifting fine snow clogged up the anemometer and stopped it completely. From 7.30 to 8 a. m. the wind must have been blowing near to 60 miles an hour [26.8^{m} per second]."

A strong southerly gale prevailed until noon, after which the wind gradually subsided. At the time the wind changed from N. to S. the temperature rose 11°.8 [6°.6 C.] in an hour, probably in 30 minutes, reaching 3°.3 [−16° C.]. The wind came with a rising barometer and a change of +.665 inch [$+16.89^{mm}$] occurred during the day.

In connection with this storm charts 15 and 16 are presented, which have been prepared through the courtesy of Prof. H. A. Hazen, Signal Service. The influx of warm southerly air is perhaps the most marked feature of the storm, as it is evident that Fort Conger was only on the outer edge of the disturbance. The extension of the isobars of 30.20 and 30.40 northwestward over Greenland and Grinnell Land is a peculiar and interesting movement.

THE FACE OF THE SKY.

Until December 1, 1881, the quantity and character of the clouds was noted only six times daily, but subsequently the record was made hourly. While at Fort Conger, however, the percentage of cloudiness was interpolated for the missing hours for the four months, August to November, 1881. It was possible to do this with very considerable accuracy, as not only had an exact record been kept of the beginning and ending of each fall of snow or rain, but there was also a quite full record of the character of the weather, clear, fair, or cloudy, in connection with the observation of auroras. As the observers were trained men of the Signal Service, these otherwise uncertain terms involved the amount of cloudiness within narrow limits. In order to prevent misapprehension all interpolated data is so marked as to be plainly distinguishable.

AUGUST, 1881.

TABLE CXXXIV.—*Amount, kind, and direction of clouds and amount of precipitation, August, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1....N.	3....E.
2....NE.	4....SE.

Date.	1	2	3	4	5	6	7	8	9	10	11	Noon.	1	2
1														
2														
3														
4														
5	10	10	10 str. NW.	9	7	5	3 cum. 8	5	7	9	10 str. 0	10	9	9
6	8	8	7 cu. str. NW.	7	7	7	2 cir. 5 cum. S.	7	7	7	7 cum.	6	5	4
7	6	5	5 cum. 8	6	7	8	8 cir. 8	7	6	4	3 cir. 8	2	1	0
8	6	4	2 cir. (8) fog. N.	2	3	3	3 cir. (8) fog. N.	2	2	1	1 cir. fog. N.	1	0	0
9	5	7	8 str. N.	8	9	10	10 str. 0	S.	S.	S.	10 nim. 0	S.	S.	S.
10	S.	S.	10 nim. 0	S.	S.	S.	10 nim. 0	S.	S.	S.	10 nim. 0	10	10	9
11	8	7	6 cu. str. NE.	6	6	6	6 cu. str. NE.	7	8	9	3 cir. 8 str. SW.	9	8	6
12	6	7	2 cum. 5 str. 0	7	6	6	5 cum. 7	5	5	5	2 cum. (6) 3 str. 0	7	8	9
13	8	7	4 cir. (8) 2 str. 0	7	8	9	2 cir. (7) 8 str. W.	9	9	8	8 cir. 7	8	9	9
14	3	1	0	0	0	0	0	0	0	0	0	0	1	1
15	0	0	0	0	1	1	2 cum.	3	5	7	8 cum. 7	7	6	5
16	4	5	5 cum.	6	7	8	9 cu. str. 0	9	9	10	10 str. 0	10	10	10
17	10	10	10 str. 0	10	10	10	Fog.	10	10	9	9 cu. str. 0	9	8	8
18	7	9	10 (?)	10	9	8	8 (?)	9	9	10	Fog.	8	6	4
19	S.	S.	10 nim. 0	S.	10	10	10 str. 0	10	10	10	10 str. 0	10	10	10
20	10	10	10 str. 0	10	10	10	Fog.	9	8	7	6 ci. cu.	7	8	9
21	10	S.	10 nim. 0	S.	S.	S.	10 nim 0	S.	S.	10	10 str. 0	10	10	10
22	10	10	10 str. 0	10	10	10	10 ci. str. 6	10	10	10	10 str. 0	10	10	10
23	10	10	10 str. 0	10	10	10	10 str. 0	10	10	10	10 nim. 0	S.	S.	S.
24	10	10	10 str. S.	10	10	10	10 str. 0	10	10	10	10 str. 0	10	10	10
25	10	10	10 str. 0	10	10	10	10 str. 0	10	10	10	Fog. NW.	F.	F.	F.
26	10	10	10 str. 0	10	10	10	10 str. 0	9	8	7	6 cum. 5	7	8	9
27	10	10	10 nim. 0	S.	S.	S.	10 nim. 0	S.	S.	S.	10 nim. 0	S.	S.	S.
28	S.	S.	10 nim. 0	S.	9	8	4 cum. 0	7	8	9	9 cum. 6	8	8	7
29	10	9	8 cir. 6	9	9	10	10 cir. 6	10	10	10	10 cir. 0	10	9	9
30	6	8	10 cir. 0	8	5	3	0 0	0	0	1	1 cum. 0	1	1	2
31	8	8	8 cum. 0	8	8	8	8 cum. 0	8	9	9	9 str. 0	8	8	7
Means	8.0	8.0	7.9	7.9	7.8	7.8	7.6	7.6	7.8	7.8	7.8	7.7	7.5	7.3
Total inches														
Total millimeters														

Figures in colums 1, 2, 4, 5, 6, 8, 9, 10, noon, 1 and 2 are interpolated very largely from the auroral record, where the face of the sky was recorded in a general manner as clear, fair, cloudy, &c. Fog included in cloudiness. Rain-gauge in position from 24th only, previous snow fall estimated.

AUGUST, 1881.

Conversions.	
5....S. 6....SW.	7....W. 8....NW.

TABLE CXXXIV.—*Amount, kind, and direction of clouds and amount of precipitation August, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Melted snow. Inches.	Melted snow. Milli-meters.	Date.
																1
																2
																3
																4
10 cu. str.	NW.	8	9	9	10 cu. str.	NW.	10	10	10	10 cu. str.	NW.	9	8.6			5
4 cum.		5	6	7	8 cir.	8	8	8	8	8 cir.		7	7.2			6
0		0	0	0	0		2	5	7	Fog.		8	3.8			7
0		3	5	7	10 cum.	1	8	6	4	2 cu. str.	0	3	3.2			8
10 nim.	0	S.	S.	S.	10 nim.	W.	S.	S.	10	10 nim.	NW.	S.	9.5			9
9 str.	0	9	9	9	9 str.	S.	9	10	10	10 str.	SW.	9	9.7			10
5 cum.	8	5	5	5	5 cum.	4	5	5	5	5 cum.	5	6	6.4			11
10 cu. str.	SW.	8	6	4	2 cum.	6	4	6	8	6 cir. (8) 4 str.	0	9	6.4			12
10 cir.	7	10	10	10	10 cir.	7	9	8	6	5 cir.	7	4	8.2			13
2 cir.		2	3	3	4 cum.		3	2	1	0		0	0.1			14
4 cum.	3	3	2	2	2 cum.	3	2	2	2	2 cir.	3	3	2.9			15
10 str.	0	10	10	10	10 str.	N.	10	10	10	10 str.	0	10	8.8			[illegible]
8 cum.		7	7	6	6 ci. cu.		5	4	3	3 cir.		5	7.4			17
0		1	2	3	4 str.	SE.	6	8	S.	10 nim.	0	S.	7.1	.—*	.—*	18
10 str.	0	10	10	10	10 str.	0	S.	S.	S.	10 str.	0	10	10.0	.—*	.—*	19
1 cir. 9 str.	0	10	10	10	10 cum.	0	10	10	10	10 str.	0	10	9.3			20
10 str.	0	8	6	4	2 cir.	0	2	1	1	0	0	2	7.3	.—*	.—*	21
10 ci. str.	5	10	10	10	10 nim.	0	S.	S.	S.	10 nim.	0	10	10.0	.—*	.—*	22
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 str.	S.	10	10.0	.—*	.—*	23
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10.0			24
Fog.	NW.	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10.0			25
10 cir.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	9.3			26
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	10.0	.13	3.3	27
7 cum.	6	6	5	5	4 cum.	6	5	7	9	10 cum.	0	10	7.4	.02	0.5	28
9 cir.	0	8	7	6	5 cir.	0	4	3	3	2 cum.	0	4	7.4			29
2 cum.	0	2	2	2	2 cum.	0	3	5	7	8 cum.	0	8	3.6			30
4 cum.	0	6	4	3	2 cir.	0	2	1	1	0	0	0	5.8			31
7.2		7.1	6.9	6.8	6.8		6.9	7.1	7.2	7.2		7.3	7.47			
														.15		
															3.8	

Figures in colums 4, 5, 6, 8, 9, 10, and midnight are interpolated very largely from the auroral record, where the face of the sky was recorded in a general manner as clear, fair, cloudy, &c.

* Inappreciable.

SEPTEMBER, 1881.

TABLE CXXXV.—*Amount, kind, and direction of clouds and amount of precipitation, September, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1....N.	3... E.
2....NE.	4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	0	0	0	0	0	0	1	1 cum.	0	1	1	0	0	0	1	3	5
2	9	8	0	0	8	8	8	8 str.	0	8	9	9	10 str.	0	10	10	10
3	0	1	1 cir.	0	1	2	2	2 cir.	0	2	2	1	0	0	1	0	0
4	0	1	1 cir.	0	1	1	0	0	0	1	2	4	5 cum.	5	5	5	5
5	0	0	0	0	0	0	0	0	0	3	5	7	10 str.	NW.	10	10	10
6	10	10	10 str.	0	10	10	10	Dense fog.	S.	F.	F.	F.	Dense fog.	0	9	7	5
7	6	7	7 cum.	3	7	7	7	7 cu. str.	0	7	7	7	7 cu. str.	0	8	9	10
8	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	10	10 str.	0	10	10	S.
9	S.	S.	5 cum (5) 5 str.	S.	10	10	10	10 cu. str.	SE.	7	5	3	0	0	0	1	2
10	0	1	1 ci. str.	0	3	5	7	10 cu. str.	0	10	10	10	10 str.	0	S.	S.	S.
11	5	4	Haze, 4 str.	0	5	6	7	8 str.	0	6	4	2	0	0	3	5	7
12	S.	S.	10 nim.	0	S.	S.	10	10 str.	SW.	10	9	9	9 str.	0	9	9	9
13	0	0	0	0	1	3	5	7 cir.	5	7	6	6	6 cir.	0	7	8	9
14	7	6	5 cum.	0	6	8	9	10 cum.	0	10	10	9	9 cum.	0	9	8	8
15	8	9	10 str.	NE.	8	6	4	1 cu. str.	0	3	5	7	10 str.	0	8	6	4
16	0	0	0	0	1	1	2	2 cum.	0	2	3	3	4 cum.	3	4	3	3
17	10	10	10 str.	0	10	10	10	10 str.	0	10	S.	S.	10 nim.	0	S.	S.	S.
18	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
19	S.	S.	10 nim.	0	S.	S.	S.	8 cir. Fog.	0	8	8	8	8 cir.	3	7	6	5
20	10	10	10 str.	0	10	9	8	8 cum.	2	7	5	3	2 str.	0	2	1	1
21	0	0	0	0	0	0	0	0	0	1	2	4	5 cum.	0	5	4	4
22	4	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
23	0	0	0	0	0	0	0	0	0	1	2	3	4 cir.	0	5	7	9
24	3	3	4 cum.	0	3	2	1	0	0	0	0	0	0	0	0	0	0
25	1	1	2 cir.	0	2	1	1	0	0	0	0	0	0	0	0	0	1
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
27	10	10	10 str.	0	10	10	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
28	10	10	10 str.	0	8	6	4	2 cir.	0	3	4	5	6 cu. str.	0	7	8	9
29	10	10	10 str.	0	10	10	10	10 str.	0	8	5	3	0	0	0	0	0
30	5	8	10 str.	0	10	10	10	10 str.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
Means	5.3	5.4	5.4		5.5	5.5	5.5	5.5		5.5	5.5	5.4	5.5		5.7	5.8	6.0
Total inches																	
Total millimeters																	

Figures in columns 1, 2, 4, 5, 6, 8, 9, 10, noon, 1 and 2, are interpolated very largely from the auroral record, where the face of the sky was recorded in a general manner as clear, fair, cloudy, &c.

SEPTEMBER, 1881.

Conversions.	
5 ...S. 6 .. SW.	7 ...W. 8 ....NW.

TABLE CXXXV.—*Amount, kind, and direction of clouds and amount of precipitation, September, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Midnight.	Daily means.	Melted snow.		Date.
														Inches.	Millimeters.	
7 cum.	0	7	8	9	9 cum.	0	9	10	10	10 str.	0	10	4.2	......	......	1
10 str.	0	8	6	4	2 cum.	0	1	1	0	0	0	0	6.5	......	......	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	......	......	3
5 cum.	6	4	3	2	2 cum.	5	1	1	0	0	0	0	2.0	......	......	4
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	6.5	......	......	5
4 cum.	0	3	2	1	1 cum.	0	2	3	4	4 cum.	0	5	6.7	......	......	6
10 cu. str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	8.5	.02	0.5	7
10 nim.	0	S.	S.	S.	10 nim.	0	S.	10	S.	10 nim.	0	S.	10.0	.02	0.5	8
2 cum.	0	1	1	0	0	0	0	0	0	0	0	0	3.8	......	......	9
10 nim.	0	S.	S.	S.	10 nim.	SE.	9	8	7	Haze. 6 str.	0	6	7.6	.06	1.5	10
10 str.	SW.	8	6	5	4 str.	SW.	6	7	9	10 str.	0	10	5.9	......	......	11
9 str.	0	9	8	8	8 cum.	0	6	4	2	0	0	0	7.8	.02	0.5	12
10 str.	0	10	10	9	9 str.	0	9	9	10	10 cir.	0	8	6.6	......	......	13
8 cum.	0	7	6	6	0	0	5	5	6	6 str.	E.	7	7.3	......	......	14
2 cir.	0	2	1	1	0	0	0	0	0	0	0	0	4.0	......	......	15
3 cum.	0	3	4	4	4 cum.	0	5	6	8	10 str.	0	10	3.5	......	......	16
10 nim.	0	S.	S.	S.	10 str.	0	10	10	10	10 str.	0	S.	10.0	.01	0.2	17
10 nim.	0	S.	S.	10	10 str.	0	10	10	S.	10 nim.	0	S.	10 0	.03	0.8	18
5 cir.	0	6	7	9	10 str.	0	10	10	10	10 str.	0	10	8.5	.02	0.5	19
0	0	0	0	0	0	0	0	0	0	0	0	0	3.6	......	......	20
3 str.	0	3	3	4	4 cum.	0	5	6	6	7 cu. str.	0	6	3.0	......	......	21
4 cum.	0	5	7	9	10 str.	0	8	5	3	0	0	0	2.6	......	......	22
10 str.	0	10	10	10	10 str.	0	8	6	4	2 str.	0	2	4.3	......	......	23
0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	......	......	24
1 cir.	0	1	1	1	1 cir.	0	1	0	0	0	0	0	0.6	......	......	25
1 cum.	0	4	6	8	10 str.	0	10	10	10	10 str.	0	10	3.4	......	......	26
10 nim.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10.0	.02	0.5	27
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	8.0	......	......	28
0	0	0	0	0	0	0	0	0	0	0	0	2	3.7	......	......	29
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	9.7	.03	0.8	30
6.2		6.0	6.0	6.0	6.0		5.8	5.7	5.6	5.5		5.5	5.7	......	......	
......		......	......	......	......		......	......	......	......		......	......	.23	......	
......		......	......	......	......		......	......	......	......		......	......	......	5.8	

Figures in columns 4, 5, 6, 8, 9, 10, and midnight, are interpolated very largely from the auroral record; where the face of the sky was recorded in a general manner as clear, fair, cloudy, &c.

OCTOBER, 1881.

TABLE CXXXVI.—*Amount, kind, and direction of clouds and amount of precipitation, October, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1....N.	3....E.
2....NE.	4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	S.	S.	10 str.	0	10	10	10	10 nim.	0	10	10	10	10 str.	0	10	10	10
2	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
3	10	10	10 str.	0	10	10	10	10 str.	0	9	7	5	4 cir.	0	4	4	4
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
5	0	0	0	0	0	0	0	0	0	2	5	7	9 cum.	0	9	9	9
6	5	3	1 str.	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
8	10	10	10 str.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
9	4	4	3 cir., 1 str.	0	6	[illegible]	9	10 cir.	0	10	10	S.	10 nim.	0	S.	S.	S.
10	10	10	10 str.	0	10	10	10	10 str.	0	10	9	9	4 ci. cu. (7), 5 st.	0	8	7	6
11	10	10	10 str.	0	10	10	10	10 str.	0	8	7	6	5 cir.	0	5	6	6
12	3	2	2 cir., lt. fog.	0	4	6	8	10 cir., lt. fog.	0	8	7	5	4 cir.	6	3	2	1
13	0	0	0	0	0	0	0	0	0	0	1	2	3 cir.	0	2	2	1
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	5	3	0	0	0	0	0	0	0	1	2	3	4 cir.	0	4	3	3
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
17	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	8	6	3
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	2	4	6	8 cir.	0	7	6	5
20	0	0	0	0	1	3	5	6 cir.	0	7	8	9	10 str.	0	10	10	10
21	10	10	10 str.	0	10	10	10	10 str.	0	9	7	5	3 cir.	0	3	2	2
22	9	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	1	2	3	4 str.	0	6	8	9	10 cir.	0	8	6	4
24	0	0	0	0	0	1	2	3 cir.	0	3	3	2	2 ci. str.	0	2	2	2
25	0	0	0	0	0	0	1	2 cum.	8	2	1	1	1 cir.	0	1	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	1	1 cir.	0	1	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	1	3	5	7 cir.	3	6	4	2	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Means	3.7	3.4	3.1		3.4	3.6	4.0	4.2		4.3	4.3	4.2	4.3		4.1	3.8	3.6
Total inches																	
Total millimeters																	

Figures in columns 1, 2, 4, 5, 6, 8, 9, 10, noon, 1 and 2, are interpolated very largely from the auroral record, where the face of the sky was recorded in a general manner as clear, fair, cloudy, &c.

OCTOBER, 1881.

Conversions.	
5....S. 6....SW.	7....W. 8....NW.

TABLE CXXXVI.—*Amount, kind, and direction of clouds and amount of precipitation. October, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Melted snow.		Date.
														Inches.	Milli-meters.	
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10.0	.02	0.5	1
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10.0	------	------	2
4 cir.	5	3	2	1	1 cir.	0	1	0	0	0	0	0	5.0	------	------	3
3 str.	0	2	2	1	Lt. haze.	0	0	0	0	0	0	0	0.6	------	------	4
8 cum., 1 str.	0	8	6	4	2 cum.	0	4	6	8	10 str.	0	8	4.8	------	------	5
0	0	2	3	4	5 cir.	0	6	7	8	10 str.	0	10	2.7	------	------	6
10 nim.	0	S.	S.	S.	10 nim.	0	10	10	10	10 str.	0	10	10.0	.01	0.2	7
10 nim.	0	S.	S.	S.	10 cir.	0	9	8	6	5 cum.	6	5	9.3	.09	2.3	8
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	8.9	.—*	.—*	9
5 str.	0	7	9	S.	10 nim.	0	S.	S.	10	10 str.	NE.	10	9.1	.05	1.3	10
6 cir., lt. fog.	0	7	8	8	9 cir.	0	8	7	6	5 cir.	6	4	7.5	------	------	11
0	0	2	3	4	4 cir., 2 ci. cu.	0	5	3	1	0	0	0	3.7	------	------	12
1 cir.	0	1	0	0	0	0	0	0	0	0	0	0	0.5	------	------	13
0	0	0	1	2	Haze., 3 str.	0	5	7	9	10 str.	0	7	1.8	------	------	14
1 cir., 2 str.	0	2	2	1	0	0	0	0	0	0	0	0	1.5	------	------	15
1 str.	0	2	1	1	0	0	3	5	7	10 str.	0	10	1.8	------	------	16
0	0	0	0	0	0	0	0	0	0	0	0	0	5.3	------	------	17
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	------	------	18
4 cir.	0	3	2	1	0	0	0	0	0	0	0	0	2.0	------	------	19
10 cir.	NW.	10	10	10	10 str.	0	10	10	10	10 str.	0	10	7.5	------	------	20
2 cir.	0	2	3	3	3 str.	0	6	8	S.	10 nim.	0	S.	6.6	.02	0.5	21
0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	.04	1.0	22
3 cir.	0	2	1	0	0	0	0	0	0	0	0	0	2.8	------	------	23
2 str.	SW.	2	3	3	3 cir.	0	2	1	0	0	0	0	1.6	------	------	24
0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	------	------	25
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	------	------	26
0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	------	------	27
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	------	------	28
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	------	------	29
0	0	0	0	0	0	0	0	0	0	0	0	0	1.2	------	------	30
2 cir., 1 str.	0	2	1	0	0	0	0	0	0	0	0	0	0.4	------	------	31
3.4		3.4	3.4	3.3	3.3		3.5	3.6	3.7	3.9		3.7	3.73	------	------	
------		------	------	------	------		------	------	------	------		------	------	.23	------	
------		------	------	------	------		------	------	------	------		------	------	------	5.8	

* Inappreciable.

Figures in columns 4, 5, 6, 8, 9, 10, and midnight are interpolated largely from the auroral record, where the face of the sky was recorded in a general manner as clear, fair, cloudy, &c.

NOVEMBER, 1881.

TABLE CXXXVII.—*Amount, kind, and direction of clouds and amount of precipitation, November, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1....N. 2....NE.	3....E. 4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	0	0	0	0	0	1	2	3 str.	0	5	7	9	10 str.	0	10	10	10
2	10	10	5 cir., 5 str.	0	10	10	10	10 str.	0	10	S.	S.	10 nim.	0	S.	S.	S.
3	7	6	5 ci. str.	0	4	3	2	0	0	0	0	0	0	0	0	1	2
4	9	8	8 cu. str.	0	6	4	2	0	0	0	0	0	0	0	0	1	2
5	2	1	0	0	1	2	3	4 cir.	0	5	7	9	10 str.	0	10	10	10
6	5	8	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
7	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
8	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
9	10	10	10 str.	0	10	10	10	10 str.	0	7	5	3	Haze.	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	1	2	3 cir.	0	4	6	8
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	1	2	3	Haze, 4 str.	0	5	6	6
16	5	6	Haze, 6 str.	0	7	8	9	10 nim.	0	S.	S.	S.	10 nim.	0	9	8	7
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	3	2	0	0	0	0	0	0	0	0	0	1	2 str.	0	1	0	0
19	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	1	2	Haze, 3 str.	0	3	2	2	Haze, 2 str.	0	1	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Means	2.7	2.6	2.4		2.4	2.3	2.3	2.3		2.3	2.4	2.6	2.6		2.7	2.8	3.0
Total inches	----	----	----		----	----	----	----		----	----	----	----		----	----	----
Total millimeters	----	----	----		----	----	----	----		----	----	----	----		----	----	----

Figures in columns 1, 2, 4, 5, 6, 8, 9, 10, noon, 1 and 2, are interpolated very largely from the auroral record, where the face of the sky was recorded in a general manner as clear, fair, cloudy, &c.

NOVEMBER, 1881.

Conversions.	
5....S. 6....SW.	7....W. 8....NW.

TABLE CXXXVII.—*Amount, kind, and direction of clouds and amount of precipitation, November, 1881.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Midnight.	Daily means.	Melted snow. Inches.	Melted snow. Millimeters.	Date.
4 cir., 6 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	E.	10	7.0	.05	1.3	1
10 nim.	0	10	9	8	4 cir., 3 str.	0	8	9	10	6 cir., 4 str.	0	8	9.5	.04	1.0	2
2 str.	0	4	6	8	10 str.	NE.	10	10	10	10 str.	NE.	9	4.5	.....	.....	3
3 cir.	0	5	7	9	10 cir.	0	8	7	5	4 cu. str.	0	3	4.2	.....	.....	4
7 cir., 3 str.	0	8	6	4	2 cir.	0	1	0	0	0	0	2	4.4	.....	.....	5
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	9.7	.....	.....	6
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	10.0	.03	0.8	7
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	10	10 str.	0	10	10.0	.09	2.3	8
0	0	0	0	0	0	0	0	0	0	0	0	0	3.5	.....	.....	9
0	0	1	2	3	4 cir.	0	3	2	1	0	0	0	0.7	.....	.....	10
9 cir.	0	9	9	10	10 str.	0	8	6	3	0	0	0	3.7	.....	.....	11
0	0	1	3	5	Haze, 7 str.	0	8	9	9	10 str.	0	8	2.5	.....	.....	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	.....	.....	13
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	14
Haze, 7 str.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	5 str.	0	5	4.8	.04	1.0	15
5 str.	0	5	5	6	6 str.	0	5	4	2	0	0	0	6.4	.04	1.0	16
0	0	0	0	0	0	0	1	2	4	5 str.	0	4	0.7	.....	.....	17
0	0	0	0	0	0	0	1	3	4	Haze, 5 str.	0	4	1.1	.....	.....	18
2 cir.	0	1	0	0	0	0	0	0	0	0	0	0	0.3	.....	.....	19
0	0	1	3	5	Haze, 6 str.	0	4	2	1	Haze.	0	0	0.9	.....	.....	20
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	21
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	22
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	23
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	24
0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	.....	.....	25
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	26
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	27
4 cir.	0	3	2	2	2 cir.	0	1	0	0	0	0	0	0.8	.....	.....	28
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	.....	.....	29
0	0	0	0	0	0	0	3	5	7	10 str.	0	5	1.2	.....	.....	30
3.1		3.3	3.4	3.7	3.8		3.7	3.6	3.5	3.3		2.9	2.9	.....	.....	
.....		.....	.....	.....	.....		.....	.....	.....	.....		.....	.....	.29	.....	
.....		.....	.....	.....	.....		.....	.....	.....	.....		.....	.....	.....	7.4	

Figures in columns 4, 5, 6, 8, 9, 10, and midnight are interpolated largely from the auroral record, where the face of the sky was recorded in a general manner as clear, fair, cloudy, etc.

DECEMBER, 1881.

TABLE CXXXVIII.—*Amount, kind, and direction of clouds and amount of precipitation, December, 1881.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Conversions.	
1....N.	3....E.
2....NE.	4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	0	0	0	0	0	0	0	0	0	10	10	10	10 str.	0	10	10	10
2	0	0	0	0	0	0	0	10 str.	0	10	10	10	10 str.		S.	S.	S.
3	0	0	0	0	0	0	0	0	0	10	10	10	10 str.	0	10	10	10
4	0	0	2 cir.	0	1	1	5	2 cir.	0	2	1	1	10 str.	0	10	S.	S.
5	10	3	2 cum.	0	1	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	2	2	3 cir.	0	0	0	0
8	5	8	10 cir.	0	10	10	10	10 cir.	0	10	10	0	0	0	0	0	0
9	10	8	5 cir.	0	5	3	3	0	0	0	9	10	10 str.	0	10	10	10
10	10	10	10 str.	0	10	10	10	10 str.	0	10	5	5	10 str.	0	10	10	10
11	0	0	3 cum.	0	3	3	3	1 str.	0	0	0	2	0	0	0	0	0
12	3	0	0	0	3	3	5	4 str.	0	4	8	10	10 str.	0	10	10	10
13	8	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	S.	S.
14	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	8 str.	0	8	2	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	3	4	4 str.	0	3	3	4
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	9	8	5 str.	0	5	3	3	3 str.	0	5	5	5	5 str.	0	5	5	5
22	10	10	10 str.	0	8	8	8	8 str.	0	8	8	9	10 nim.	0	10	10	10
23	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
24	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
25	0	0	0	0	0	0	0	0	0	0	0	5	10 str.	0	10	S.	S.
26	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	10	10	10 str.	0	10	2	1	0	0	0	0	0	1 str.	0	1	0	0
30	0	0	0	0	2	2	4	4 str.	0	4	8	10	10 str.	0	9	9	10
31	0	0	0	0	0	0	0	0	0	2	8	9	10 str.	0	10	10	10
Means	3.7	3.4	3.4		3.5	3.1	3.3	3.3		4.0	4.7	4.9	5.5		5.4	5.1	5.1
Total inches																	
Total millimeters																	

Hourly observations commenced on 3d; figures for 1st and 2nd in columns 1, 2, 4, 5, 6, 8, 9, 10, noon, and 1, 2, 4, 5, 6, 8, 9, 10, midnight, are interpolated from auroral record.

DECEMBER, 1881.

Conversions.	
5....S.	7....W.
6....SW.	8....NW.

TABLE CXXXVIII.—*Amount, kind, and direction of clouds and amount of precipitation, December*, 1881.

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Melted snow Inches.	Melted snow Millimeters.	Date.
10 cir.	0	10	10	10	10 str.	0	0	0	0	0	0	0	5.0	-----	-----	1
10 nim.	0	S.	S.	10	10 cum.	5	8	7	6	6 cir.	0	5	6.8	.07	1.5	2
10 str.	0	10	10	10	10 str.	0	10	10	0	0	0	0	5.8	-----	-----	3
10 nim.	0	S.	10	10	10 str.	0	10	10	10	10 str.	0	10	6.5	.—	. . *	4
0	0	0	0	0	0	0	1	1	0	0	0	0	0.8	-----	-----	5
0	0	0	0	0	0	0	0	0	0	0	0	0	- 0	-----	-----	6
0	0	0	0	0	2 cir.	0	4	3	5	4 cir.	0	3	1.2	-----	-----	7
0	0	0	2	1	1 cir.	0	4	8	7	9 cir.	0	8	5.1	-----	-----	8
10 str.	0	8	3	5	6 str.	0	10	10	10	10 str.	0	10	7.3	-----	-----	9
10 str.	0	S.	10	10	10 str.	0	10	10	10	6 cir.	0	0	9.0	.—	-----	10
0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	-----	-----	11
10 str.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	7.5	.05	1.3	12
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	9.5	.03	0.8	13
0	0	0	0	0	0	0	0	0	0	0	0	0	4.9	.01	0.2	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0	-----	-----	15
0	0	.	2	2	2 str.	0	2	3	3	2 str.	0	3	0.8	-----	-----	16
0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	-----	-----	17
0	0	0	0	0	0	0	0	0	0	0	0	0	0	-----	-----	18
0	0	0	0	0	0	0	0	0	0	0	0	0	—0	-----	-----	19
0	0	0	0	0	3 str.	0	3	3	3	4 str.	0	5	0.9	-----	-----	20
5 str.	0	5	5	5	5 str.	0	5	5	5	5 str.	0	8	5.2	-----	. .	21
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	9.4	.10	2.5	22
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	10.0	.07	1.8	23
10 nim.	0	5	0	0	0	0	0	0	0	0		0	6.4	.04	1.0	24
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 str.		10	6.0	.02	0.5	25
10 str.	0	10	10	10	10 str.	0	S.	S.	5	0		0	9.0	.—	. *	26
2 cir.	0	0	0	0	0	0	0	0	0	0		0	0.0	-----	-----	27
0	0	0	0	0	0	0	0	0	3	1 str.		4	0.3	-----	-----	28
0	0	0	0	0	0	0	0	0	0	0		0	1.9	-----	-----	29
10 str.	0	10	10	10	10 cir.	0	7	5	0	0		0	5.6	-----	-----	30
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.		10	6.6	-----	-----	31
5.1		4.8	4.6	4.6	4.8		4.6	4.7	4.1	4.1		3.7	4.3	----	----	
-----		-----	-----	-----	-----		-----	-----	-----	-----		-----	--	0.39	----	
-----		-----	-----	-----	-----		-----	-----	-----	-----		-----	-----	...	9.6	

* Inappreciable.

JANUARY, 1882.

TABLE CXXXIX.—*Amount, kind, and direction of clouds and amount of precipitation, January, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1....N.	3....E.
2....NE.	4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	10	10	10 str.	0	10	0	2	10 str.	0	4	4	5	1 str.	0	0	0	0
2	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
3	10	10	10 str.	0	10	10	10	10 cir.	0	10	10	10	10 cir.	0	0	0	1
4	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	1
5	10	10	10 str.	0	10	10	10	10 cir.	0	10	10	10	10 str.	0	10	10	0
6	5	3	3 str.	0	3	10	10	10 str.	0	10	10	10	3 str.	0	2	3	0
7	4	4	4 cir.	0	7	5	6	8 cir.	0	7	5	0	0	0	0	5	3
8	1	1	1 cir.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	2	10	10 nim.	0	S.	S.	S.
13	8	8	10 str.	0	10	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	2 cu. str.	0	0	1	10	10 nim.	0	S.	S.	S.
15	S.	4	10 nim.	0	S.	S.	10	10 str.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
16	9	7	10 str.	0	10	10	10	10 str.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
17	S.	S.	10 nim.	0	S.	2	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	3 str.	0	5	10	10
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	2	2	0	0	0	3	4	6	4 cir.	0	4	4	4
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	2	3	4 str.	0	5	5	4
28	0	0	0	0	0	0	0	0	0	2	4	10	10 str.	0	10	10	10
29	2	1	0	0	0	0	0	0	0	0	2	1	2 cir.	0	2	1	1
30	2	4	10 str.	0	10	10	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	7
31	6	8	2 cu. str.	0	1	0	8	10 str.	0	10	10	10	10 str.	0	10	10	10
Means	3.5	3.2	3.5		3.6	2.9	3.1	3.5		3.4	3.7	4.4	4.1		3.8	4.1	3.3
Total inches																	
Total millimeters																	

JANUARY, 1882.

Conversions.	
5....S. 6....SW	7....W. 8....NW.

TABLE CXXXIX.—*Amount, kind, and direction of clouds and amount of precipitation, January,* 1882.

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = + 81° 44'$ $\lambda = - 64° 45' = - 4^h 19^m$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Melted snow. Inches.	Melted snow. Milli-meters.	Date.
0	0	0	0	0	2 str.	0	0	2	0	10 str.	0	10	3.8	-----	-----	1
10 str.	0	5	8	8	10 cir.	0	10	10	10	10 str.	0	10	9.6	-----	-----	2
0	0	3	2	1	0	0	0	3	8	10 str.	0	10	6.2	-----	-----	3
2 cir.	0	4	3	2	4 str.	0	5	5	10	10 str.	0	10	7.8	-----	-----	4
0	0	0	0	0	3 str.	0	10	3	4	4 str.	0	4	6.6	-----	-----	5
0	0	0	2	2	4 str.	0	4	3	3	3 str.	0	3	4.4	-----	-----	6
2 cir.	0	0	0	0	0	0	0	0	0	0	0	0	2.5	-----	-----	7
0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	-----	-----	8
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	9
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	10
0	0	0	3	2	1 str.	0	1	0	0	0	0	4	0.5	-----	-----	11
10 nim.	0	S.	S.	S.	10 str.	0	S.	S.	S.	10 nim.	0	10	6.3	.14	3.6	12
0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	-----	-----	13
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	6.4	.07	1.8	14
10 nim.	0	S.	S.	S.	10 str.	0	10	10	10	8 str.	0	8	9.6	.05	1.3	15
10 nim.	0	S.	S.	S.	10 nim.	0	S.	10	S.	10 nim.	0	S.	9.9	.04	0.2	16
0	0	0	0	0	0	0	0	0	0	0	0	0	1.7	.—	.—*	17
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	18
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	19
3 str.	0	3	0	2	3 str.	0	1	1	0	0	0	0	0.6	-----	-----	20
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	21
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	22
10 str.	0	10	10	8	2 str.	0	2	0	0	0	0	0	2.9	-----	-----	23
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	24
3 cir.	0	1	0	0	0	0	0	0	0	0	0	0	1.5	-----	-----	25
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	-----	-----	26
0	0	0	0	0	0	0	0	0	0	0	0	0	1.0	-----	-----	27
7 cir., 3 str.	0	2	0	0	0	0	0	0	0	0	0	1	2.9	-----	-----	28
0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	-----	-----	29
4 cu. str.	0	2	1	2	8 cum.	0	3	2	1	2 cir. str.	0	5	6.4	.27	7.1	30
Haze, 4 str.	0	5	8	3	0	0	0	0	0	0	0	0	5.2	-----	-----	31
2.8		2.4	2.5	2.3	2.5		2.5	2.2	2.5	2.8		3.1	3.2	-----	-----	
-----		-----	-----	-----	-----		-----	-----	-----	-----		-----	-----	0.57	-----	
-----		-----	-----	-----	-----		-----	-----	-----	-----		-----	-----	-----	14.0	

* Inappreciable.

FEBRUARY, 1882.

TABLE CXL.—*Amount, kind, and direction of clouds and amount of precipitation, February, 1882.*

Conversions.	
1....N.	3....E.
2....NE.	4 .. SE.

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6
2	4	3	2 ci. str.	0	2	0	0	1 cir.	0	1	2	3	1 cir.	0	2	2	2
3	0	0	0	0	0	0	0	0	0	0	2	2	2 cir.	0	3	4	7
4	8	3	0	0	0	4	3	2 str.	0	0	2	2	2 str.	0	2	3	2
5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	2 cu. str.	0	2	1	1	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	3	8	10	10 cir.	0	10	10	10
10	0	0	0	0	0	0	0	2 ci. str.	0	3	4	8	7 cir., 3 str.	0	4	2	3
11	0	0	0	0	0	0	0	1 ci. str.	0	0	0	0	1 str.	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	3 cir.	0	3	2	2
14	0	0	3 str.	0	1	1	0	3 str.	0	1	3	3	3 cir.	0	2	3	3
15	0	0	0	0	0	0	0	1 ci. str.	0	1	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	1 cir.	0	1	2	3	2 cir.	0	2	4	5
17	10	10	10 str.	0	8	8	10	10 str.	0	10	S.	S.	10 nim.	0	S.	S.	S.
18	0	0	0	0	0	0	3	6 ci. str.	0	4	10	10	10 str.	0	10	10	10
19	4	4	3 str.	0	3	2	2	6 str.	0	4	10	10	10 str.	0	10	10	10
20	0	0	0	0	0	0	1	1 str.	0	1	2	3	4 cir.	0	4	6	10
21	0	0	0	0	0	0	0	2 str.	0	1	1	1	2 cir., 4 str.	0	4	3	3
22	3	2	3 str.	0	3	2	4	4 str.	0	4	7	3	7 cir.	0	8	7	5
23	0	0	0	0	0	0	0	1 str.	0	1	1	2	1 cir.	0	1	1	2
24	0	0	0	0	1	1	1	0	0	0	1	2	3 cir., 1 str.	0	5	4	6
25	S.	S.	10 nim.	0	S.	10	9	5 ci. str.	0	4	10	10	10 str.	0	10	10	9
26	8	8	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 str.	0	10	10	10
27	8	7	5 str.	0	5	5	9	10 str.	0	10	5	10	4 cir., 2 str.	0	4	5	8
28	2	5	0	0	0	1	0	0	0	2	3	4	4 cir., 2 str.	0	6	4	4
Means	2.1	1.9	1.7		1.6	1.6	1.9	2.4		2.2	3.3	3.8	4.1		3.9	4.1	4.5
Total inches																	
Total millimeters																	

FEBRUARY, 1882.

Conversions.	
5....S.	7....W.
6....SW.	8....NW.

TABLE CXL.—*Amount, kind, and direction of clouds and amount of precipitation, February,* 1882.

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Melted snow.[a] Inches.	Melted snow.[a] Millimeters.	Date.
3 cir.	0	3	3	3	8 ci. str.	0	4	4	4	4 ci. str.	0	3	2.1	------	------	1
3 cir.	0	2	0	0	0	0	0	0	0	0	0	0	1.2	------	------	2
4 cir., 6 str.	0	10	10	10	5 str.	0	7	7	7	4 cum.	0	8	4.1	------	------	3
1 str.	0	2	0	0	0	0	0	0	0	0	0	0	1.5	------	------	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	------	------	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	------	------	6
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	------	------	7
2 cir.	0	2	1	0	0	0	0	0	0	0	0	0	0.2	------	------	8
5 cir., 4 str.	0	9	2	0	0	0	0	0	0	0	0	0	3.4	------	------	9
3 cir.	0	6	4	1	0	0	0	0	0	0	0	0	2.1	------	------	10
1 cir.	0	0	0	0	0	0	0	0	0	0	0	0	0.1	------	------	11
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	------	------	12
1 cir.	0	1	2	0	0	0	0	0	0	0	0	0	0.6	------	------	13
1 str.	0	1	0	1	0	0	0	0	0	0	0	0	1.2	------	------	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	------	------	15
3 cir.	0	4	1	1	4 str.	0	5	5	5	8 str.	0	8	2.7	------	------	16
10 nim.	0	10	3	1	0	0	0	0	0	0	0	0	6.7	.04	1.0	17
10 str.	0	7	2	2	0	0	0	0	3	3 str.	0	3	4.3	------	------	18
10 str.	0	10	5	5	5 str.	0	1	2	2	0	0	0	5.3	------	------	19
10 str.	0	10	10	10	8 str.	0	8	8	2	0	0	0	4.1	------	------	20
2 cir., 3 str.	0	10	10	8	8 str.	0	3	3	3	3 str.	0	3	3.1	------	------	21
4 cir.	0	2	0	0	0	0	0	0	0	0	0	0	2.8	------	------	22
2 cir.	0	2	0	0	0	0	0	0	0	0	0	0	0.6	------	------	23
5 cir., 2 str.	0	10	10	10	10 nim.	0	S.	S.	S.	10 nim.	0	S.	5.1	.02	0.5	24
10 str.	0	10	10	10	10 str.	0	5	5	8	8 str.	0	8	8.8	.02	0.5	25
10 str.	0	10	10	S.	10 nim.	0	S.	10	8	8 str.	0	8	9.6	.03	0.8	26
10 str.	0	10	5	6	4 cir.	0	3	2	4	3 cir.	0	3	6.1	------	------	27
4 str.	0	4	2	2	2 str.	0	2	2	10	10 str.	0	10	3.5	------	------	28
4.6		4.8	3.2	2.9	2.6		2.1	1	2.4	2.2		2.3	2.84	------	------	
------		------	------	------	------		------	------	------	------		------	------	0.11	------	
------		------	------	------	------		------	------	------	------		------	------	------	2.8	

[a] Including frost.

MARCH, 1882.

TABLE CXLI.—*Amount, kind, and direction of clouds and amount of precipitation, March, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1....N.	3....E.
2....NE.	4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	10	10	10 str.	0	10	S.	S.	10 nim.	0	10	10	10	10 str.	0	10	10	10
2	4	4	4 str.	0	3	3	3	2 cir., 3 str.	0	4	5	6	4 str.	0	5	5	5
3	5	5	6 ci. str.	0	5	5	4	8 str.	0	8	8	9	7 str.	0	S.	S.	6
4	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	10	4	4	10 str.	0	10	10	10
5	S.	S.	10 nim.	0	S.	S.	9	10 str.	0	10	4	0	0	0	0	4	10
6	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
7	0	0	0	0	1	2	2	2 str.	0	5	3	2	6 str.	0	8	S.	S.
8	3	4	2 str.	0	2	1	4	8 str.	0	9	10	10	10 nim.	0	S.	S.	S.
9	2	2	3 str.	0	3	5	6	3 cum., 3 str.	0	6	3	1	0	0	0	0	4
10	3	6	10 str.	0	10	10	9	5 cum., 3 str.	0	6	6	5	6 cum., 2 str.	0	8	S.	S.
11	10	10	10 str.	0	10	9	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
12	S.	S.	10 nim.	0	S.	10	10	10 nim.	0	S.	S.	S.	4 cum., 4 str.	0	8	6	4
13	0	3	3 str.	0	3	3	2	4 cum., 1 str.	0	4	2	2	2 str.	0	1	1	2
14	0	1	1 str.	0	2	2	4	3 cum.	0	3	1	1	2 ci. str.	0	1	0	0
15	0	0	0	0	0	2	2	2 ci. str.	0	1	0	0	0	0	0	0	0
16	1	2	10 str.	0	10	10	10	10 str.	0	9	3	2	6 cum.	0	5	6	6
17	10	8	2 cum., 7 str.	0	10	10	10	3 cir., 6 str.	0	S.	S.	S.	3 cum., 6 str.	0	7	7	S.
18	10	10	10 str.	0	10	10	4	1 cum., 2 str.	0	7	10	10	9 str.	0	9	7	5
19	10	10	10 str.	0	10	10	10	10 nim.	0	S.	S.	S.	7 ci. str., 2 str.	0	8	6	0
20	7	7	10 str.	0	9	10	10	10 str.	0	S.	S.	S.	10 nim.	0	S.	10	10
21	10	10	10 str.	0	10	10	S.	10 nim.	0	10	10	9	2 cum., 6 str.	0	5	5	1
22	0	0	0	0	0	0	0	0	0	0	0	0	2 str.	0	0	0	0
23	2	6	2 cum., 3 str.	0	6	3	6	10 nim.	0	4	4	4	5 str.	0	8	8	9
24	4	3	2 str.	0	1	1	1	0	0	0	0	0	4 str.	0	0	0	0
25	2	1	0	0	1	1	1	1 str.	0	1	2	8	6 str.	0	3	3	2
26	0	1	1 str.	0	0	0	0	0	0	0	0	1	1 cir.	0	1	1	1
27	6	7	4 str.	0	5	7	6	6 str.	0	6	5	4	3 str.	0	3	4	3
28	0	1	1 str.	0	1	0	0	1 str.	0	0	0	0	0	0	0	0	0
29	4	6	6 str.	0	8	10	10	10 str.	0	10	7	4	4 str.	0	2	0	0
30	0	1	2 str.	0	3	3	3	3 str.	0	3	5	9	8 str.	0	9	10	9
31	10	10	10 str.	0	9	9	9	6 ci. str., 1 str.	0	8	7	6	0	0	0	0	0
Means	4.9	5.4	5.8		5.9	6.0	6.0	6.2		6.2	5.8	5.4	5.4		5.2	5.3	5.1
Total inches																	
Total millimeters																	

MARCH, 1882.

Conversions.	
5....S.	7....W.
6....SW.	8....NW.

TABLE CXLI.—*Amount, kind, and direction of clouds and amount of precipitation, March, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Melted snow. Inches.	Melted snow. Milli-meters.	Date.
10 str.	0	10	10	10	10 str.	0	10	10	5	5 str.	0	5	9.4	.01	0.2	1
2 str.	0	2	0	0	0	0	0	0	0	4 ci. str.	0	4	3.0	----	----	2
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	5	5 str.	0	8	7.7	.03	0.8	3
10 str.	0	10	10	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	9.5	.03	0.8	4
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	8.2	.01	0.2	5
10 nim.	0	S.	S.	S.	5 str.	0	2	0	0	0	0	0	7.8	.02	0.5	6
5 nim.	0	S.	S.	7	2 cum., 3 str.	0	2	2	3	3 str.	0	3	4.4	.—*	.—*	7
10 nim.	0	7	8	8	4 str.	0	2	2	4	4 str.	0	2	6.0	.01	0.2	8
8 str.	0	6	9	10	10 str.	0	9	2	4	0	0	0	4.1	----	----	9
10 nim.	0	S.	10	2	0	0	0	10	10	10 str.	0	10	7.5	.01	0.2	10
10 nim.	0	S.	S.	S.	10 nim.	0	7	S.	S.	10 nim.	0	S.	9.9	.09	2.3	11
3 str.	0	2	2	0	0	0	0	0	0	0	0	0	5.5	.03	0.8	12
2 str.	0	4	8	10	6 cir., 4 str.	0	2	1	1	1 cir.	0	0	3.0	----	----	13
0	0	0	1	1	0	0	1	1	1	0	0	0	1.1	----	----	14
0	0	0	1	4	0	0	0	0	0	0	0	0	0.5	----	----	15
2 cum., 5 str.	0	7	3	6	10 str.	0	10	7	4	4 cir., 6 str.	0	10	6.8	----	----	16
10 nim.	0	S.	S.	S.	10 nim.	0	10	10	10	10 str.	0	10	9.5	.01	0.2	17
0	0	3	4	3	3 str.	0	6	5	4	4 str.	0	7	6.4	----	----	18
1 str.	0	2	3	4	1 cum., 3 str.	0	5	5	5	4 str.	0	6	6.6	.—*	.—*	19
10 str.	0	10	10	10	10 str.	0	9	10	10	10 str.	0	10	9.7	.03	0.8	20
4 cu. str.	0	3	4	3	3 cu. str.	0	4	3	0	0	0	0	5.9	.—*	.—*	21
2 cum., 4 str.	0	4	4	4	6 str.	0	6	3	4	2 cum., 3 str.	0	3	2.0	----	----	22
8 str.	0	6	4	3	2 cum., 1 str.	0	4	5	5	3 cum.	0	4	5.2	.—*	.—*	23
0	0	0	0	1	2 str.	0	2	3	3	1 str.	0	1	1.2	----	----	24
3 str.	0	4	3	0	0	0	0	0	0	0	0	0	1.8	----	----	25
3 ci. str.	0	3	3	3	2 ci. str.	0	3	3	2	2 ci. str.	0	5	1.5	----	----	26
5 cu. str.	0	4	4	3	1 cum.	0	0	0	0	0	0	0	3.6	----	----	27
0	0	0	0	0	0	0	0	0	2	2 ci. str.	0	2	0.4	----	----	28
0	0	1	1	1	0	0	0	0	0	0	0	0	3.5	----	----	29
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	7.0	----	----	30
0	0	0	0	0	0	0	0	0	0	0	0	0	3.5	----	----	31
5.5		5.4	5.5	5.3	4.8		4.3	4.3	3.9	4.0		4.2	5.0	----	----	
----	----	----	----	----	----	----	----	----	----	----	----	----	----	0.28	----	
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	7.0	

* Inappreciable.

APRIL, 1882.

TABLE CXLII.—*Amount, kind, and direction of clouds and amount of precipitation, April, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\varphi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1....N.	3....E.
2....NE.	4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	1 cir.	0	0	0	0
3	1	2	2 str.	0	5	5	3	1 str.	0	0	0	0	0	0	0	0	0
4	1	1	1 ci. str.	0	1	6	3	2 ci. str.	0	3	10	10	5 ci. str.	0	4	3	3
5	10	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S	S.	10 nim.	SW.	7	6	7
6	1	2	2 str.	0	2	2	1	1 str.	0	2	5	4	1 cir.	5	2	8	7
7	2	4	2 cir.	0	3	5	6	1 ci. str.	3	2	2	5	6 cir.	7	9	10	9
8	10	10	10 str.	0	9	10	S.	10 nim.	0	S.	10	10	10 str.	0	10	10	10
9	10	10	10 str.	0	10	8	3	1 str.	0	0	0	0	0	0	1	2	5
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
11	3	7	6 cu. str.	0	10	10	10	5 cum.	3	10	6	5	2 cum.	7	1	1	0
12	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	H.	10	10 str.	0	10	10	10	10 str.	0	10	9	7	1 cir.	7	0	0	1
14	0	0	0	0	0	0	0	0	0	0	1	2	2 cir.	0	2	1	0
15	1	1	0	0	0	0	0	0	0	0	0	0	4 cir.	0	0	0	0
									0								
16	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
17	0	0	0	0	0	0	0	0	0	0	4	4	5 cu. str.	0	5	9	9
18	S.	S.	2 cir., 5 nim.	0	S.	S.	S.	3 ci. str.	0	S.	5	7	10 nim.	0	S.	S.	S.
19	S	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
20	S.	S.	4 str.	0	7	S.	S.	10 nim.	0	S.	S.	S.	1 str.	0	2	2	2
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	10	S.	10 str.	0	10	10	10	10 str.	0	S.	10	10	10 nim.	0	S.	S.	S.
23	10	9	10 str.	0	10	10	10	5 ci. str., 3 str.	0	3	3	0	0	0	0	0	0
24	0	0	2 ci. str.	0	4	8	10	10 str.	0	10	10	10	10 str.	0	10	10	8
25	S.	S.	10 nim.	0	S.	S.	S	10 nim.	0	S.	3	4	5 ci. str.	0	6	3	1
26	1	1	1 cir.	8	1	2	1	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	3 ci. cu.	0	3	2	2	3 cum.	0	8	5	2
Means	3.6	4.0	3.7		4.1	4.6	4.2	3.5		3.8	3.7	3.7	3.5		3.3	3.4	3.2
Total inches																	
Total millimeters																	

APRIL, 1882.

Conversions.	
5....S.	7....W.
6....SW.	8....NW.

TABLE CXLII.—*Amount, kind, and direction of clouds and amount of precipitation, April, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Melted snow. Inches.	Melted snow. Milli-meters.	Date.
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			1
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			2
0	0	0	0	0	0	0	0	0	1	2 ci. str.	0	2	1.0			3
7 cir.	0	5	10	10	10 str.	0	10	5	7	5 str.	0	4	5.2	.—*	.—*	4
5 cir.	4	2	4	3	2 cu. str.	0	3	4	4	2 str.	0	2	6.7	.07	1.8	5
10 cir.	5	9	8	7	5 str.	0	3	3	3	0	0	0	3.7			6
7 cir.	7	7	7	6	5 ci. str.	0	7	10	10	10 str.	0	10	6.0			7
10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10.0	.—*	.—*	8
4 cir.	0	3	2	2	0	0	0	0	0	0	0	0	3.0			9
1 cir.	0	0	0	0	0	0	0	0	1	3 ci. str.	0	6	0.6			10
3 cum.	0	3	3	3	4 cu. str.	0	4	6	6	6 cu. str.	0	3	4.9	.—*	.—*	11
0	0	0	0	H.	Haze.	0	H.	H.	H.	Haze.	0	H.	0.1			12
1 cir.	0	0	0	0	0	0	0	0	0	0	0	0	3.7			13
1 cir.	6	1	1	1	2 cir.	6	2	3	2	1 cir.	0	2	1.0			14
0	0	0	3	6	5 cir.	0	7	7	9	6 cir. (6), 2 str.	0	8	2.4			15
0	0	0	0	0	1 cir.	0	2	2	0	0	0	0	0.6			16
8 ci. cu.	6	8	10	10	5 cir.(3), 3 str.	0	7	7	S.	3 cir.(6), 6 nim.	0	S.	5.2	.—*	.—*	17
4 ci. str., 4 str.	0	8	8	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	9.0	.02	0.5	18
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 str.	0	S.	10.0	.07	1.8	19
2 ci. str.	0	1	1	1	0	0	1	2	0	0	0	0	4.8	.02	0.5	20
1 cir.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	3.8			21
10 str.	0	10	9	9	8 ci. cu.	2	6	6	5	5 ci. cu.(2), 1 str.	0	6	9.0	.—*	.—*	22
0	0	0	0	0	0	0	0	3	4	3 cir.	8	2	3.5			23
10 str.	0	10	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	8.4	.01	0.2	24
1 ci. str.	0	2	2	1	0	0	0	0	0	1 cir.	0	1	4.6	.01	0.2	25
8 cum.	0	8	0	0	0	0	0	0	0	0	0	0	1.0			26
0	0	0	0	0	0	0	0	0	0	0	0	0	0.1			27
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			28
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0			29
8 str.	0	9	6	5	1 cir., 6 str.	0	9	10	10	10 str.	0	10	4.7			30
3.8		3.9	3.8	3.8	3.6		3.7	3.9	4.1	3.9		3.9	3.77			
														0.20		
															4.8	

* Inappreciable.

MAY, 1882.

TABLE CXLIII.—*Amount, kind, and direction of clouds and amount of precipitation, May, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Conversions.	
1....N.	3....E.
2....NE.	4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	9	9	3 cir., 6 str.	0	9	10	9	5 ci. cu., 3 str.	0	8	4	7	8 str.	0	8	7	6
2	8	9	4 cum., 5 str.	0	9	9	7	5 cir. (2), 2 str.	0	6	6	5	6 cu. str.	S.	7	9	9
3	3	3	3 cir. cu.	4	4	4	5	4 cum.	6	3	4	5	2 cu. str.	SW.	4	2	2
4	5	4	3 cir. str.	6	6	3	2	4 ci. cu.	6	2	0	0	1 cir.	0	1	1	1
5	S.	4	2 cir., fog.	0	F.	F.	2	0	0	1	1	0	0	0	0	0	1
6	1	3	8 cir.	6	2	4	7	7 cir.	6	4	3	1	1 cu. str.	0	0	0	0
7	8	8	5 cum., 3 str.	0	6	7	6	6 cir. cu.	0	10	10	10	10 str.	0	10	10	10
8	S.	S.	10 nim.	0	S.	S.	S.	4 cum., 6 nim.	0	10	10	7	5 cum.	0	9	10	10
9	2	3	5 ci. cu.	0	8	10	10	1 cum., 9 str.	0	9	7	4	3 str.	0	4	4	1
10	8	9	10 nim.	0	S.	S.	5	5 cum., 2 str.	0	10	7	5	1 cum.	0	1	0	1
11	2	2	4 ci. cu.	0	5	8	10	10 str.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
12	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
13	S.	S.	10 nim.	0	S.	S.	10	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
14	9	8	2 cum., 5 str.	0	8	9	10	6 ci. cu., 3 str.	0	9	8	5	0	0	0	0	0
15	3	3	4 cir.	1	7	8	8	8 ci. cu.	0	10	9	9	6 cir. str., 3 str.	0	10	10	10
16	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
17	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
18	10	10	5 cum. (8), 5 str.	0	9	10	10	10 cum.	0	10	9	9	9 cum.	0	8	10	10
19	6	3	1 cum.	0	1	1	2	1 cu. str.	0	2	1	1	0	0	0	1	1
20	6	7	2 cum.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	2	4	4 cu. str.	0	5	6	2	1 cum.	0	1	1	0	1 cum.	0	0	0	0
22	9	9	10 str.	0	10	10	10	10 str.	0	8	5	7	4 str.	0	7	6	4
23	10	10	10 str.	0	S.	S.	S.	4 cir. (1), 2 str.	0	9	9	9	5 cum. (5), 3 str.	0	9	7	8
24	10	8	6 ci. cu. (2), 2 str.	0	10	9	0	0	0	0	1	1	0	0	0	1	1
25	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
26	0	0	0	0	1	3	2	4 cir.	0	4	3	1	0	0	0	0	1
27	10	10	6 cir., 3 str.	0	8	10	10	10 str.	0	10	10	10	10 str.	0	10	10	10
28	10	10	5 cum., 3 str.	0	3	2	3	2 cum.	0	3	4	3	3 cum.	0	3	4	4
29	10	9	5 cir., 3 str.	0	8	7	7	5 cir. (8), 1 str.	0	7	7	6	5 ci. str.	0	5	5	6
30	S.	S.	10 nim.	3	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
31	10	S.	10 nim.	0	S.	S.	8	8 cum.	8	6	5	4	5 cum.	4	5	4	4
Means	7.5	7.3	6.9		7.4	7.7	6.9	6.7		6.8	6.3	5.8	5.3		5.5	5.5	5.5
Total inches																	
Total millimeters																	

MAY, 1882.

Conversions.	
5....S. 6....SW.	7....W. 8....NW.

TABLE CXLIII.—*Amount, kind, and direction of clouds and amount of precipitation, May, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily Means.	Melted snow. Inches	Melted snow. Milli-meters.	Date.
4 cu. str.	0	2	3	6	5 cir. (5), 2 str.	0	10	10	9	2 cum., 7 str.	0	9	7.5	-----	-----	1
10 str.	0	7	6	5	4 str.	0	4	8	8	2 cir. (5), 4 str.	0	4	7.0	-----	-----	2
2 cum.	0	1	1	0	0	0	0	0	0	0	0	0	2.2	-----	-----	3
0	0	1	1	2	4 str.	0	4	4	3	8 str.	0	H.	2.5	-----	-----	4
1 ci. cu.	0	0	0	0	0	0	0	0	0	0	0	1	1.8	. —[b]	. —[b]	5
0	0	0	1	2	1 cir., 5 str.	0	8	7	8	8 ci. str.	0	8	3.5	-----	-----	6
10 str.	0	S.	S.	S.	1 cum., 6 nim.	0	7	3	6	6 cum.	2	S.	8.4	. —	. —[b]	7
10 nim.	0	S.	8	7	10 str.	0	10	9	3	1 str.	E.	1	8.3	.01[b]	0.2	8
1 cum.	0	1	1	1	1 cum.	0	4	9	5	7 ci. str.	0	S.	4.9	. —[b]	. —[b]	9
2 cu. str.	NW.	2	2	3	6 cu. str.	0	9	8	8	6 cu. str.	0	3	5.6	. —[b]	. —[b]	10
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	8.8	.04	1.0	11
10 nim.	0	S.	S.	10	10 str.	0	10	S.	S.	10 nim.	0	S.	10.0	.05	1.3	12
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	9	4 ci. cu. (5), 3 str.	0	7	9.7	.04	1.0	13
0	0	0	2	2	2 cir.	0	2	4	3	4 cir.	8	4	4.4	-----	-----	14
5 ci. str., 5 str.	0	10	10	10	10 cu. str.	NE.[a]	10	10	10	10 nim.	NE.[a]	S.	8.7	. —[b]	. —[b]	15
10 nim.	0	S.	S.	S.	10 nim.	0	S.	10	10	10 str.	0	10	10.0	. —[b]	. —[b]	16
10 str.	0	10	10	10	10 str.	0	10	10	10	10 cum.	0	10	10.0	-----	-----	17
9 cum.	0	10	10	10	10 cum.	0	10	10	7	10 cum.	8	7	9.5	-----	-----	18
0	0	0	0	2	2 cir.	0	1	0	1	4 cir.	0	6	1.5	-----	-----	19
0	0	0	0	0	0	0	0	0	0	1 cir.	0	1	0.7	-----	-----	20
0	0	0	2	2	3 cir.	0	3	7	9	10 cir.	0	10	3.0	-----	-----	21
10 str.	0	S.	S.	S.	10 nim.	0	7	10	S.	10 nim.	0	10	8.7	. —[b]	. —[b]	22
9 str.	0	9	5	2	2 str.	0	2	4	3	6 cir., 1 str.	0	10	7.4	. —[b]	. —[b]	23
1 cir., 2 str.	0	2	8	2	6 cum.	0	10	10	10	10 str.	0	10	5.1	-----	-----	24
2 cum., 7 str.	0	8	6	5	2 cir.	0	5	4	3	0	0	0	7.6	-----	-----	25
2 cum.	0	1	2	3	4 cir.	0	5	5	7	7 cir.	0	9	2.7	-----	-----	26
10 str.	0	10	S.	S.	10 nim.	SE.	10	10	10	10 str.	S.	10	9.9	. —[b]	. —[b]	27
4 cum.	0	6	9	10	4 cir., 6 str.	0	10	10	10	7 cir., 3 str.	0	10	6.3	-----	-----	28
6 cu. str.	0	6	10	10	10 str.	E.	S.	S.	S.	10 nim.	E.	S.	7.8	.04	1.0	29
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	10	10 nim.	0	10	10.0	.04	1.0	30
9 cum. str.	0	9	9	9	9 str.	0	10	10	8	4 cir., 3 str.	0	4	7.6	.01	1.2	31
5.8		5.6	6.0	5.9	6.5		6.8	7.2	6.8	7.0		6.9	6.70	-----	-----	
-----		-----	-----	-----	-----		-----	-----	-----	-----		-----	-----	0.23	-----	
-----		-----	-----	-----	-----		-----	-----	-----	-----		-----	-----	-----	5.7	

[a] Rapidly.

[b] Inappreciable.


2.8
2.5
3.2
3.6
2.2
2.0
1.8
1.1
1.0

JUNE, 1882.

TABLE CXLIV.—*Amount, kind, and direction of clouds and amount of precipitation, June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1..N. 2....NE.	3....E. 4....SE.

Date.	1	2	3		4	5	6	7		8	9	10	11		Noon.	1	2
1	4	3	0	0	1	1	1	1 cir.	0	2	2	6	7 cum.	0	3	1	1
2	6	7	5 cir.	0	4	6	5	5 cum.	0	7	7	6	4 ci. str.	0	4	5	3
3	1	1	2 cir.	0	4	4	5	4 ci. str.	0	6	2	2	3 ci. str.	0	4	4	3
4	10	10	10 str.	0	8	7	9	10 str.	0	10	10	10	10 str.	0	10	10	10
5	1	2	3 cum.	3	3	3	2	3 cum.	2	4	2	1	0	0	0	0	0
6	4	6	5 ci. str.	0	4	6	10	10 str.	0	10	10	10	10 str.	0	10	10	10
7	7	5	2 cir.	0	1	1	0	0	0	0	1	1	1 cum.	0	1	1	2
8	5	4	3 cum.	0	2	2	0	0	0	0	0	0	0	0	0	0	0
9	4	4	5 cir.	1	4	4	3	2 cir.	0	2	0	1	1 cir.	0	1	1	1
10	3	3	4 cir.	0	3	2	5	6 ci. cu.	0	4	4	7	3 ci. cu. (3), 3 str.	0	6	4	5
11	10	10	9 cu. str.	0	9	10	9	3 cum.	0	1	1	1	0	0	0	1	0
12	10	10	10 cum.	0	10	10	10	10 cu. str.	0	10	10	10	10 nim.	0	S.	S.	S.
13	S.	10	10 str.	0	10	10	10	10 str.	0	10	10	10	10 cu. str.	0	10	10	7
14	S.	S.	10 nim.	0	R.	R.	R.	10 nim.	0	R.	R.	R.	10 nim.	0	R.	R.	R.
15	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	10	10	S.	10 nim.	0	S.	S.	S.
16	S.	S.	10 nim.	0	S.	S.	R.	10 cu. str.	0	10	10	S.	10 nim.	0	S.	S.	10
17	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.
18	S.	S.	10 nim.	0	S.	S.	10	10 str.	0	10	10	10	10 str.	0	10	10	S.
19	9	9	6 ci. str.	0	4	6	4	4 ci. str.	0	7	8	10	4 cum., 5 str.	0	10	9	9
20	10	9	10 str.	S.	8	9	9	10 cu. str.	SW.	10	10	10	10 cu. str.	S.	7	10	10
21	10	10	10 ci. cu.	0	9	9	10	10 cu. str.	W.	10	7	8	5 cir. (7), 4 cu. str.	0	10	6	7
22	5	4	7 ci. str.	0	6	7	8	7 ci. cu.	6	8	7	6	10 cu. str.	SW.	10	10	10
23	9	10	10 ci. str.	0	10	8	7	5 cir.	0	5	10	10	10 str.	0	R.	R.	R.
24	10	10	4 cu. str.	0	10	10	10	10 cu. str.	0	10	10	10	8 cum.	6	6	6	8
25	10	10	10 ci. str.	0	10	9	9	4 cir.	0	1	0	0	0	0	0	0	0
26	1	2	1 cir.	0	1	2	2	1 cir.	0	1	0	0	0	0	0	0	0
27	4	5	5 cir.	6	6	6	4	0	0	1	1	2	4 ci. cu.	5	9	5	3
28	5	4	6 cum.	0	3	3	4	6 ci. cu.	0	1	1	2	3 cir.	7	4	4	7
29	5	5	2 cum.	5	5	6	6	2 cir.	0	6	4	3	3 cir.	6	3	3	2
30	4	4	5 cir.	0	4	3	3	1 cum.	0	1	0	0	0	0	0	0	0
Means	6.9	6.9	6.7		6.3	6.5	6.5	5.9		5.9	5.6	5.9	5.9		5.9	5.7	5.6
Total inches																	
Total millimeters																	

JUNE, 1882.

Conversions.	
5....S. 6....SW.	7....W. 8....NW.

TABLE CXLIV.—*Amount, kind, and direction of clouds and amount of precipitation, June, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

3		4	5	6	7		8	9	10	11		Mid-night.	Daily means.	Rainfall. Inches.	Rainfall. Milli-meters.	Date.
0	0	0	0	0	0	0	0	2	4	3 cir.	0	2	1.8	------	------	1
0	0	0	1	0	0	0	0	0	0	0	0	0	3.1	------	------	2
6 ci. str.	0	5	8	8	8 ci. str.	0	10	10	10	10 ci. str.	0	10	5.5	------	------	3
4 cum., 5 str.	0	8	5	4	2 cum.	3	1	1	1	1 cum.	3	0	6.9	------	------	4
0	0	0	0	0	0	0	1	2	3	4 ci. str.	0	4	1.6	------	------	5
Dense fog.	0	F.	F.	F.	Dense fog.	0	F.	F.	F.	2 cum.	8	3	8.3	------	------	6
2 cum.	0	3	8	9	9 cum.	1	10	10	10	10 cum.	1	8	4.2	------	------	7
0	0	0	0	0	0	0	0	0	0	1 cir.	0	1	0.8	------	------	8
2 cir.	0	3	2	5	5 ci. str.	0	3	1	1	2 cum.	0	4	2.5	------	------	9
4 ci. cu., 2 str.	0	6	8	8	8 cum.	8	9	9	9	9 cum.	0	9	5.9	------	------	10
2 cir.	0	3	3	7	10 cum.	0	10	10	10	10 cum.	0	10	5.8	------	------	11
10 nim.	0	S.	S.	10	10 str.	0	10	10	S.	10 str.	0	S.	10.0	.—*	.—*	12
8 cir. (8), 2 cu. str.	0	10	10	10	10 cu. str.	0	10	10	10	10 str.	0	10	9.9	.—*	.—*	13
4 cum. (6), 5 str.	0	9	8	10	10 str.	0	10	S.	S.	10 nim.	0	S.	9.8	.07	2.5	14
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	10.0	.08	2.0	15
10 str.	0	9	10	10	10 str.	NE.	10	10	10	10 nim.	0	S.	9.9	.02	0.5	16
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	S.	10.0	.03	0.8	17
10 nim.	0	S.	S.	S.	10 nim.	0	S.	S.	S.	10 nim.	0	8	9.9	.02	0.5	18
1 cum., 9 str.	0	10	10	10	10 str.	0	10	10	10	10 str.	0	10	8.5	.—*	.—*	19
10 cu. str.	S.	10	7	7	10 cu. str.	SW.	10	10	10	10 str.	0	10	9.4	.—*	.—*	20
8 cir. (7), 2 str.	0	10	4	9	10 cum.	7	8	10	10	5 ci. str.	6	5	8.6	------	------	21
5 cir., 5 cu. str.	0	10	10	10	10 cu. str.	0	10	10	10	10 cu. str.	0	8	8.5	------	------	22
10 nim.	0	R.	R.	R.	10 nim.	0	R.	R.	R.	10 nim.	0	R.	9.3	.04	1.0	23
4 cum.	5	2	2	3	8 cum.	0	10	10	10	10 str.	0	10	8.2	.—*	.—*	24
0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	------	------	25
0	0	1	0	0	0	0	0	3	3	3 cir.	0	3	1.0	------	------	26
3 ci. cu.	5	2	2	1	0	0	0	2	1	2 cum.	0	3	3.0	------	------	27
4 cum.	7	4	2	1	1 cum.	0	4	7	8	5 cum.	0	4	3.6	------	------	28
5 cum.	6	2	1	3	1 cum.	0	1	3	4	6 ci. str.	0	1	3.7	------	------	29
0	0	0	0	0	0	0	0	0	0	0	0	0	1.0	------	------	30
5.7		5.6	5.4	5.8	6.1		6.2	6.7	6.8	6.4		6.1	6.12	----	----	
------		------	------	------	------		------	------	------	------		------	------	0.26	------	
------		------	------	------	------		------	------	------	------		------	------	------	7.3	

* Inappreciable.

JULY, 1882.

TABLE CXLV.—*Amount, kind, and direction of clouds and amount of precipitation, July, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Conversions.	
1.... N.	3.... E.
2.... NE.	4.... SE.

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	8 cir. SW.	6 cir. SW.	6 ci. cu. 0	5 ci. cu. W.	5 cir. W.	5 ci. cu. NW.
2	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
3	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
4	10 str. 0	10 str. 0	8 str. 0	8 str. 0	6 str. 0	5 str. 0
5	0 0	0 0	0 0	0 0	0 0	0 0
6	0 0	0 0	0 0	0 0	0 0	0 0
7	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	5 cum. 0
8	10 str. SW.	10 str. SW.	10 str. SW.	10 str. 0	10 str. 0	10 str. 0
9	10 cum. SW.	10 str. SW.	8 str. SW.	8 str. SW.	10 str. SW.	10 str. SW.
10	10 str. 0	10 str. 0	10 str. S.	10 str. 0	10 str. 0	10 str. 0
11	10 str. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0
12	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	8 str. 0
13	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
14	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0
15	10 str. 0	10 ci. str. 0	10 cu. str. 0	10 nim. 0	10 nim. 0	10 nim. SE.
16	10 str. SW.	10 str. SW.	10 str. SW.	10 str. SW.	10 str. SW.	10 str, SW.
17	10 cu. str. 0	10 str. S.	10 str. S.	10 str. S.	9 cum. SW.	10 cum. SW.
18	Fog. 0	Fog. 0	10 str. 0	Fog. 0	Fog. 0	Fog. 0
19	10 nim. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 cu. str. 0
20	10 str. 0	10 str. 0	10 str. 0	9 cum. 0	10 cu. str. 0	10 str. 0
21	10 str. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 str. 0	10 str. 0
22	10 str. 0	10 str. 0	10 str. 0	9 cu. str. 0	9 cu. str. 0	9 cu. str. 0
23	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
24	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0
25	3 cir. (7), 7 str. 0	5 cir. (7), 5 str. 0	3 ci. cu. (7), 7 str.	10 str. 0	10 str. 0	10 cu. str. W.
26	10 str. W.	10 str. W.	10 nim. W.	10 nim. SW.	4 cir. (6), 6 cu. str. S.	3 cir. (6), 7 cu. str.
27	10 cum. SW.	5 cum. SW., 5 str.	10 str. SW.	10 str. S.	10 str. S.	10 str. SW.
28	10 cu. str. S.	10 cu. str. S.	10 cu str. S.	10 cu. str. S.	10 cu. str. S.	10 cu. str. SE.
29	10 str. 0	10 str. E.	10 str. E.	10 str. 0	10 str. 0	10 cu. str. E.
30	10 str. 0	10 nim. E.	10 nim. 0	10 nim. 0	10 str. SE.	8 cum. W.
31	10 cum. 0	10 cum. 0	10 cum. 0	5 cum. 0	3 cir. 0	7 cir. 0
Means	9.3	9.2	9.2	8.8	8.7	8.6
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	10 cum. E.	10 nim. E.	10 nim. E.	10 nim. E.	10 nim. W.	10 nim. E.
2	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
3	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
4	0 0	0 0	0 0	0 0	0 0	0 0
5	0 0	0 0	0 0	0 0	0 0	0 0
6	1 cir. 0	1 cir. 0	2 cir. 0	3 ci. cu. 0	5 ci. str. 0	6 cu. str. 0
7	10 cu. str. 0	10 cu. str. 0	10 cu. str. 0	10 str. 0	10 str. 0	9 cu. str. 0
8	6 cum. 0	3 str., 4 cum. 0	4 cum. 0	7 cum. 0	6 cum. 0	10 cu. str. 0
9	Fog. 0	Fog. 0	10 str. 0	8 cum. 0	3 cum. 0	4 cum. 0
10	10 nim. 0	10 nim. 0	10 cu. str. 0	10 cu. str. 0	10 cu. str. 0	10 cu. str. 0
11	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0
12	9 cir., 1 cu. 0	3 cir., 5 cu. str. 0	6 cir., 3 cu. str.	10 ci. cu. 0	10 str. 0	9 str. 0
13	7 cum. 0	3 ci., 5 str. 0	10 cu. str. 0	10 cu. str. 0	10 str. 0	10 nim. 0
14	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0
15	9 cu. str. 0	9 cum. 0	9 cum. 0	10 str. 0	2 cum. 0	3 cum. 0
16	10 str. 0	10 str. 0	10 cu. str. 0	10 str. 0	10 str. 0	10 cu. str. 0
17	10 cu. 0	10 cu. 0	10 cu. 0	10 cum. 0	10 cu. str. 0	8 cu. str. 0
18	10 cu. str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 nim. 0
19	2 cum. 0	2 cum. 0	10 cum. 0	4 cum. 0	6 cum. 0	4 cu., 5 str. 0
20	4 ci., 5 cum. 0	8 cum. 0	8 cum. 0	8 cum. 0	9 cum. 0	9 cum. 0
21	10 cum. 0	10 cum. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
22	10 cum. 0	8 ci. str. 0	8 ci. str. 0	10 cum. 0	10 str. 0	10 str. 0
23	10 nim. 0	10 nim. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
24	5 cum. 0	5 cum. 0	10 str. 0	10 str. 0	10 str. 0	10 nim. 0
25	4 cum. 0	4 cum. 0	2 cum., 4 str. 0	5 cum. 0	10 str. 0	9 cir. str. 0
26	5 cum. 0	8 cum. 0	8 cum. 0	4 cum. 0	8 cum. 0	8 cum. 0
27	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0
28	10 str. 0	6 cu. str. 0	7 cum. 0	9 cum. 0	10 str. 0	10 str. 0
29	10 nim. 0	10 nim. 0	10 nim. 0	10 str. 0	10 str. 0	10 nim. 0
30	8 cum. 0	9 cu. str. 0	9 cum. 0	8 cum. 0	7 cum. 0	8 cum. 0
31	5 cir. 0	4 cir. 0	2 cir. 0	2 cir. 0	1 cir. 0	0 0
Means	7.8	7.6	8.1	8.0	8.0	8.1

JULY, 1882.

Conversions.	
5....S.	7....W.
6....SW.	8....NW.

TABLE CXLV.—*Amount, kind, and direction of clouds and amount of precipitation, July, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
6 cir. 0	7 cir. 0	5 cum. 0	8 cum. 0	10 cum. 0	10 cum. 0	.02	0.5	1
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	11 nim. 0	.01	0.2	2
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	------	------	3
10 str. 0	10 str. 0	10 str. 0	1 cir. 0	0 0	0 0	------	------	4
0 0	0 0	0 0	0 0	0 0	0 0	------	------	5
0 0	0 0	0 0	0 0	0 0	0 0	------	------	6
3 cum. 0	3 cum. 0	6 cum. S.	10 cum. S.	8 cum. S.	10 cu. str. S.	------	------	7
10 str. 0	10 str. 0	10 nim. 0	10 nim. 0	10 nim. S.	8 cum. SW.	.02	0.5	8
10 cum. 0	Fog. S.	Fog. S.	Fog. S.	Fog. S.	Fog. S.	------	------	9
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 cu. str. 0	10 cu. str. 0	.01	0.2	10
10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. E.	10 nim. E.	.08	2.0	11
10 nim. 0	10 nim. 0	9 cu. str. 0	10 nim. 0	10 nim. 0	7 cir. (7), 3 cu. str.	.03	0.8	12
10 str. 0	10 str. 0	10 str. 0	10 str. 0	9 cum. NW.	10 cum. NW.	.12	3.0	13
10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	.46	11.7	14
10 nim. S.	10 nim. S.	10 nim. S.	10 nim. S.	10 nim. S.	10 nim. S.	.18	4.6	15
10 str. SW.	10 str. SW.	10 str. SW.	10 nim. SW.	10 nim. 0	10 cu. str. 0	.01	0.2	16
9 cum. SW.	10 cum. SW.	10 cum. 0	10 cum. SW.	10 str. 0	10 cum. 0	.—*	.—*	17
10 str. 0	10 str. 0	10 str. 0	8 cum. SW.	10 cum. SW.	10 cum. SW.	.—*	.—*	18
10 cu. str. 0	10 cu. str. 0	10 str. 0	10 str. SW.	9 str. SW.	9 str. SW.	.—*	.—*	19
10 str. 0	10 str. 0	8 cu. str. SE.	8 cum. E.	8 cum. E.	5 cum. E.	------	------	20
10 str. 0	10 str. 0	10 str. 0	10 str. E.	10 cum. E.	10 cum. E.	.—*	.—*	21
9 cu. str. 0	8 cu. str. 0	10 cum. 0	9 cum. 0	8 ci. str. 0	9 cum. 0	------	------	22
10 str. 0	10 str. 0	10 nim. 0	10 nim. 0	10 str. 0	10 nim. 0	.01	0.2	23
10 str. 0	6 cum. NW.	7 cum. NW.	7 cum. NW.	8 cum. NW.	5 cum. 0	.04	1.0	24
10 cum. SW.	4 cum. NW., 6 str.	6 cum. 0	7 cu. str. 0	3 cir. str., 3 cu. str.	3 ci. str., 2 cu. str.	------	------	25
8 cum. SE.	5 cum. W.	4 cum. W.	4 cum. SW.	4 cum. SW.	5 cum. 0	.—*	.—*	26
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	------	------	27
10 str. SE.	10 str. SE.	10 str. SE.	10 str. SE.	10 str. SE.	10 str. SE.	.—*	.—*	28
9 cum. W.	8 cum. NE.	9 cum. 0	10 cum. 0	10 cum. 0	10 str. 0	.02	0.5	29
8 cum. W.	8 cum. E.	7 cum. E.	7 cum. E.	7 cum. NE.	7 cum. NE.	.—*	.—*	30
4 cir. 0	3 cir. 0	7 cir. W.	9 cir. 0	8 cir. 0	7 cir. 0	------	------	31
8.6	8.3	8.3	8.3	8.2	8.1	------	------	
------	------	------	------	------	------	1.01	25.4	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
10 nim. E.	10 nim. E.	10 str. E.	10 cu. str. E.	10 nim. E.	10 nim. E.	8.4	1
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10.0	2
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10.0	3
0 0	0 0	0 0	0 0	0 0	0 0	3.2	4
0 0	0 0	0 0	0 0	0 0	0 0	0.0	5
7 ci. str. 0	9 ci. str. 0	9 cu. str. 0	10 str. 0	3 ci. str., 2 cu. str.	3 cum., 3 cu. str.	2.7	6
10 cu. str. 0	10 str. 0	9 cu. str. 0	10 str. 0	10 str. 0	10 cu. str. 0	8.9	7
8 cum. 0	8 cum. 0	8 cum. 0	5 cum. 0	5 cum., 3 str. 0	9 cu. str. 0	8.5	8
4 cu. str. 0	5 cu. str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	8.8	9
10 str. 0	9 cu. str. 0	9 cu. str. 0	9 cu. str. 0	10 str. 0	10 nim. 0	9.9	10
10 nim. 0	10 nim. 0	10 str. 0	10 str. 0	10 str. 0	10 nim. 0	10.0	11
9 str. 0	10 str. 0	10 str. 0	10 cu. str. 0	10 str. 0	10 str. 0	9.7	12
10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	9.8	13
10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10.0	14
5 ci. str. 0	6 cum. 0	6 cum. 0	5 ci. str. 0	6 cum. 0	7 cum. 0	8.2	15
8 cum. 0	9 cu. str. 0	10 str. 0	10 str. 0	10 str. 0	10 nim. 0	8.9	16
4 cu. 0	Fog. 0	Fog. 0	Fog. 0	Fog. 0	Fog. 0	9.6	17
10 nim. 0	10 str. 0	10 nim. 0	10 nim. 0	10 str. 0	10 nim. 0	10.0	18
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	8.8	19
10 cu. str. 0	10 cu. str. 0	10 cu. str. 0	10 cu. str. 0	10 str. 0	10 str. 0	9.1	20
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10.0	21
10 str. 0	10 str. 0	10 str. 0	10 str. 0	4 cu., 5 str. 0	6 cir., 4 str. 0	9.4	22
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 nim. 0	10 str. 0	10.0	23
10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 str. 0	8.9	24
10 ci. str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	8.4	25
10 cu. str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	8.0	26
10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10 str. 0	10.0	27
10 str. 0	10 nim. 0	10 nim. 0	10 nim. 0	10 str. 0	10 str. 0	9.7	28
10 str. 0	10 nim. 0	10 nim. 0	10 str. 0	10 str. 0	10 str. 0	9.8	29
9 cum. 0	7 cum. 0	8 cu. str. 0	8 str. 0	8 cum. 0	4 cum. 0	8.1	30
5 cum. 0	5 cum. 0	7 cum. 0	7 cum. 0	3 cum. 0	2 cum. 0	5.2	31
8.4	8.6	8.9	8.9	8.7	8.6	8.5	

* Inappreciable.

AUGUST, 1882.

TABLE CXLVI.—*Amount, kind, and direction of clouds and amount of precipitation, August, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	1 str.	0	0	0	4 cum.	0
2	10 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.
3	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
4	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
5	1 cum.	2 cum.	2 cum.	8 cum.	10 cum.	10 cum.
6	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 str.
7	10 str.	10 str.	10 str.	9 str.	9 str.	9 str.
8	4 cum., 5 str.	5 cum., 5 str.	5 cum., 5 str.	10 str.	9 str.	9 str.
9	10 str.	9 str.	10 str.	8 cum.	8 cum.	10 cum.
10	10 nim.	5 str.	10 str.	10 str.	10 str.	10 str.
11	10 str.	10 nim.	10 nim.	10 nim.	10 str.	10 str.
12	8 cir.	5 cum.	4 cir.	3 cir.	1 cir.	1 cir.
13	8 cir.	8 cir.	8 cir.	8 cir.	8 cir.	8 cir.
14	10 cum.	9 cum.	10 cum.	10 cum.	10 cum.	9 cum.
15	10 str.	9 cu. str.	9 cu. str.	10 cu. str.	9 str.	10 str.
16	10 cu. str.	9 cum.	8 cum.	6 cum.	7 cum.	8 cum.
17	10 cum.	10 cum.	10 cum.	10 cum.	5 cum., 5 str.	10 str.
18	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
19	10 cum.	9 cum.	10 cum.	2 cir., 8 cum.	4 cir., 6 str.	3 cum., 7 str.
20	10 nim.	10 str.	10 str.	10 str.	8 str.	5 cum.
21	9 cum.	9 cum.	2 cir., 7 cum.	5 cir., 2 cum.	8 cir.	8 cir.
22	2 cir., 3 cum.	3 cir.	2 cir.	1 cir.	2 cir.	7 cir.
23	10 str.	10 str.	10 str.	10 nim.	10 nim.	10 nim.
24	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
25	10 str.	10 str.	10 cum.	10 cum.	10 cum.	10 cum.
26	5 cum.	4 cum.	4 cum.	7 cum.	2 cum.	1 cum.
27	9 cum.	9 cum.	9 cum.	9 cum.	10 cum.	10 cum.
28	6 cum.	7 cum.	9 cum.	7 cum.	3 cum.	6 cum.
29	3 ci. str.	4 cum.	5 cum.	5 cum.	5 cu. str.	10 str.
30	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
31	10 cum.	10 cum.	10 cum.	10 cum.	10 cum.	10 str.
Means	8.5	8.3	8.4	8.3	8.3	8.4
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	9 cum.	9 cum.	9 cum.	10 cum.	10 cum.	10 cum.
2	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
3	10 cum.	10 cum.	10 cum.	10 str.	10 cum.	10 cum.
4	4 cir., 3 cum.	9 ci. cu.	10 cir.	10 cir.	10 ci. str.	10 cu. str.
5	6 cum.	9 cum.	10 cum.	10 cum.	10 cum.	10 cum.
6	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 str.
7	10 cum.	10 cum.	10 cum.	10 cum.	10 cum.	10 cum.
8	10 cum.	10 cum.	10 cum.	10 cum.	10 str.	10 str.
9	10 cum.	10 cum.	10 cum.	10 cum.	10 nim.	10 nim.
10	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
11	9 cum.	7 cum.	7 cum.	2 cir., 3 cum.	2 cir., 3 cum.	2 cir., 2 cum.
12	0	0	0	0	1 cir.	1 cir.
13	2 cir.	5 cum.	5 cum.	5 cum.	10 cum.	10 cum.
14	8 cu. str.	8 cu. str.	8 cu. str.	8 cu. str.	8 cum.	8 cu. str.
15	8 str.	3 str.	9 cum.	10 cum.	10 cum.	5 cum.
16	4 cum.	5 cum.	6 cum.	9 cu. str.	10 str.	10 str.
17	10 nim.	10 nim.	10 str.	10 str.	10 str.	10 str.
18	10 str.	10 str.	3 cum.	2 cum.	1 cum.	1 cum.
19	8 cum.	8 cum.	8 cum.	8 cum.	3 cum.	3 cum.
20	2 cum.	3 cum.	3 cum.	3 cum.	2 cum.	2 cum.
21	8 cir.	6 cir.	5 cir.	6 cir.	3 cir.	3 cir.
22	2 cir.	5 cir.	8 cir.	8 cir.	7 cir.	7 cir.
23	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
24	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
25	10 nim.	10 nim.	10 nim.	10 nim.	10 str.	10 str.
26	1 cir.	4 cir.	4 cir.	6 cir.	5 cir.	5 cir.
27	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
28	3 cum.	2 cum.	3 cum.	7 cum.	10 str.	10 str.
29	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
30	10 str.	7 cum.	7 cum.	7 cum.	7 cum.	8 cum.
31	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
Means	7.7	7.9	7.9	8.2	8.1	8.0

AUGUST, 1882.

TABLE CXLVI.—*Amount, kind, and direction of clouds and amount of precipitation, August, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
0	0	5 ci. cu.	9 ci. cu.	8 ci. cu.	8 cum.	.—*	.—*	1
10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.	.02	0.5	2
10 str.	10 str.	10 str.	10 str.	10 str.	10 cum.	------	------	3
10 str.	10 str.	4 ci. cu., 5 str.	10 cum.	9 cum.	3 cir., 7 cum.	------	------	4
2 cir., 1 cum.	3 cum.	8 cum.	10 cum.	7 cum.	3 cum.	------	------	5
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	.06	1.5	6
10 cu. str.	9 cu. str.	9 cum.	8 cum.	10 cum.	8 cum.	------	------	7
7 str.	9 str.	8 cir. str.	10 cum.	10 cum.	10 cum.	------	------	8
10 str.	7 cum.	5 ci. cu.	4 cum.	7 cum.	8 cum.	.05	1.3	9
10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.28	7.1	10
8 str.	7 cum.	7 cum.	9 cum.	9 cum.	10 cum.	.22	5.6	11
1 cir.	1 cir.	0	0	0	0	------	------	12
7 cir.	8 cir.	3 cir.	3 cir.	0	1 cir.	------	------	13
10 cum.	8 cum.	8 cum.	7 cu. str.	9 cum.	8 cu. str.	------	------	14
10 str.	10 str.	10 str.	10 str.	10 str.	8 str.	------	------	15
8 cum.	8 cum.	5 cum.	4 cum.	3 str.	3 ci. str.	------	------	16
10 str.	10 cum.	10 str.	10 nim.	10 nim.	10 nim.	.10	2.5	17
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.01	0.2	18
10 str.	10 str.	10 str.	10 str.	8 cum.	10 cu. str.	------	------	19
8 cum.	10 cum.	8 cum.	3 cum.	2 cum.	2 cum.	.—*	.—*	20
9 cir.	10 cir.	10 cir.	8 cir.	9 cir.	8 cir.	------	------	21
5 cir.	1 cir.	2 cir.	2 cir.	2 cir.	2 cir.	------	------	22
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.03	0.8	23
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.01	0.2	24
10 cum.	8 cum.	8 cum.	10 str.	10 str.	10 nim.	.—*	.—*	25
1 cum.	1 cum.	6 cum.	7 cum.	7 ci. cu.	2 ci. cu.			26
10 cum.	10 cum.	10 str.	10 str.	10 str.	10 str.	.—*	.—*	27
2 cum.	1 cum.	1 cum.	1 cum.	1 cum.	2 cum.	.01	0.2	28
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	.01	0.2	29
10 nim.	10 nim.	10 str.	10 str.	10 str.	10 str.	.01	0.2	30
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	------	------	31
8.0	7.8	7.8	7.9	7.8	7.5	------	------	
------	------	------	------	------	------	0.81	20.3	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
10 str.	10 nim.	10 nim.	10 str.	10 str.	10 str.	6.3	1
10 str.	10 str.	10 str.	10 str.	10 str.	0	10.0	2
10 cum.	10 cum.	10 cum.	10 cum.	10 str.	10 cum.	10.0	3
10 cu. str.	10 cu. str.	9 cum.	7 cum.	4 ci. cu., 2 cum.	5 cum.	9.2	4
10 cum.	10 cum.	10 cum.	10 cum.	10 cum.	10 cum.	7.6	5
10 nim.	10 nim.	10 str.	10 str.	10 str.	10 str.	10.0	6
10 cum.	10 cum.	10 cum.	10 cum.	10 str.	5 cum., 5 str.	9.7	7
10 str.	10 str.	10 str.	2 cir., 8 str.	10 str.	10 str.	9.6	8
10 str.	10 str.	10 str.	10 nim.	10 nim.	10 nim.	9.0	9
10 nim.	10 nim.	10 nim.	10 nim.	10 str.	10 str.	10.0	10
3 cir.	4 cir.	6 cir.	6 cir.	8 cir.	9 cir.	7.6	11
1 cir.	1 cir.	3 cir.	7 cir.	9 cir.	9 cir.	2.3	12
8 cum.	9 cum.	7 cum.	5 cir., 5 cum.	5 cir., 5 cum.	10 cum.	6.7	13
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	9.0	14
2 cum.	2 cum.	4 cum.	9 cum.	10 str.	10 str.	8.9	15
10 str.	10 cum.	10 cum.	10 cum.	10 cum.	10 cum.	7.6	16
10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	17
1 cum.	1 cum.	0	3 cu. str.	8 cu. str.	8 cu. str.	7.1	18
8 cum.	7 cum.	7 cum.	9 cu. str.	10 str.	10 str.	8.6	19
3 cum.	5 cum.	5 cum.	6 cum.	4 cum.	5 cum.	5.4	20
3 cir.	3 cir.	4 cum.	4 cum.	2 cir., 2 cum.	4 cum.	6.5	21
6 cir.	8 ci. str.	4 ci. str.	5 ci. cu.	6 cum.	4 cu. str.	4.3	22
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	23
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	10.0	24
10 str.	10 nim.	10 nim.	10 nim.	3 cum.	3 cum.	9.2	25
5 cir.	6 cir.	3 cir.	2 cum.	3 cum.	8 cum.	4.1	26
10 str.	10 str.	10 str.	10 nim.	10 nim.	10 nim.	9.8	27
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	5.9	28
10 nim.	10 str.	10 str.	10 str.	10 str.	10 str.	9.0	29
8 cum.	10 cum.	10 cum.	10 cum.	10 cum.	10 cum.	9.3	30
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	10.0	31
8.1	8.3	8.2	8.7	8.7	8.9	8.2	

* Inappreciable.

SEPTEMBER, 1882.

TABLE CXLVII.—*Amount, kind, and direction of clouds and amount of precipitation, September, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	10 str.	10 str.	Fog.	Fog.	Fog.	Fog.
2	5 cum.	7 cum.	8 cum.	8 cum.	9 cum.	9 cum.
3	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
4	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
5	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
6	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
7	10 str.	10 str.	10 str.	10 str.	10 str.	10 nim.
8	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
9	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
10	8 ci. str.	10 str.	10 str.	10 str.	10 str.	10 str.
11	3 str.	3 str.	3 cir., 1 str.	5 cir., 2 str.	7 cir.	7 cir.
12	4 cum.	5 cum.	5 cum.	3 cum.	1 cum.	1 cum.
13	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
14	10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.
15	1 cir.	0	0	0	0	2 ci. str.
16	10 cir.	3 ci. cu., 7 str.	2 cum., 2 str.	1 cir., 3 str.	9 cir.	6 cir., 4 str.
17	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
18	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
19	0	0	0	0	0	0
20	10 str.	10 str.	10 str.	2 ci. str.	2 ci. str.	3 ci. str.
21	0	0	0	3 cum.	9 cum.	9 str.
22	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
23	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
24	10 str.	10 str.	5 cum.	3 cum.	2 cum.	2 cum.
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	3 cum.	4 cum.	5 cum.	5 cum.	5 str.	6 str.
28	1 ci. str.	5 cum.	6 cum.	9 str.	9 str.	8 str.
29	3 cum.	3 cum.	4 cum.	4 cum.	3 cum.	2 cum.
30	3 cum.	1 cum.	1 cum.	0	0	0
Means	6.7	6.9	6.7	6.6	6.9	7.0
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	2 cir.	1 cir.	3 cir.	5 cir.	4 cir.	8 ci. cu.
2	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
3	10 str.	10 str.	10 str.	10 str.	9 cum.	9 cum.
4	10 nim.	10 nim.	3 cum.	7 cum.	10 str.	10 str.
5	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
6	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
7	10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.
8	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
9	5 cum.	4 cum.	5 cum.	5 cum.	3 cum.	3 cum.
10	1 cir., 3 str.	5 cum.	4 cum.	4 cum.	6 cum.	8 cum.
11	0	0	2 cum.	0	0	0
12	Fog.	Fog.	Fog.	10 str.	10 str.	10 nim.
13	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
14	0	1 ci. str.	1 ci. str.	1 ci. str.	1 ci. str.	1 ci. str.
15	0	0	1 cir.	1 cir.	1 cir.	1 cir.
16	10 cum.	10 str.	10 str.	10 str.	10 str.	10 str.
17	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
18	10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 nim.
19	0	0	0	0	0	0
20	6 ci. cu.	3 ci. cu.	1 cir.	0	0	0
21	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
22	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
23	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
24	3 cum.	4 cum.	3 cum.	4 cum.	5 cum.	4 cum.
25	5 cir.	4 ci. str.	7 ci. str.	6 ci. str.	0	4 str.
26	6 ci. str., 2 cum.	9 ci. str.	10 ci. str.	10 ci. str.	10 str.	10 nim.
27	7 ci. cu.	7 ci. cu.	8 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.
28	6 cu. str.	9 cu. str.	10 str.	10 str.	10 str.	10 str.
29	8 cum.	6 cum.	3 cum.	3 cum.	7 cir., 3 cum.	5 cir., 5 cum.
30	8 cum.	8 cum.	10 nim.	10 nim.	10 nim.	10 nim.
Means	7.1	7.0	7.0	7.2	7.3	7.6

SEPTEMBER, 1882.

TABLE CXLVII.—*Amount, kind, and direction of clouds and amount of precipitation, September, 1882.*

Washington mean time. Reduce to local mean time by adding 49m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
10 str.	10 str.	8 cum.	7 cum.	7 cum.	2 cir.	------	------	1
9 str.	9 str.	10 str.	10 str.	10 str.	10 str.	.05	1.3	2
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.01	0.2	3
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.08	2.0	4
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.13	3.3	5
10 nim.	10 str.	10 str.	10 str.	10 str.	10 str.	.02	0.5	6
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.02	0.5	7
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.02	0.5	8
10 str.	10 str.	5 cum.	4 cum.	3 cum.	1 cum.	------	------	9
8 cum.	2 cum.	2 cum.	2 cum.	2 cum.	2 cir., 4 str.	------	------	10
4 cir., 2 cum.	1 cir., 1 cum.	0	0	0	0	------	------	11
1 cum.	10 cum.	1 cum.	1 cir.	3 cir.	Fog.	.—*	.—*	12
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.02	0.5	13
10 str.	10 str.	2 cum.	3 cum.	3 cum.	2 cum.	.—*	.—*	14
2 ci. str.	2 ci. str.	3 ci. str.	3 ci. str.	1 ci. str.	0	------	------	15
8 cum.	9 cum.	10 cum.	10 cum.	10 cum.	10 cum.	------	------	16
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.01	0.2	17
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.02	0.5	18
0	0	0	0	0	0	------	------	19
5 cu. str.	3 cu. str.	3 cu. str.	3 cir.	4 cir.	5 ci. str.	------	------	20
9 str.	9 cu. str.	10 cu. str.	10 nim.	10 nim.	10 nim.	.05	1.3	21
10 cu. str.	10 cu. str.	10 cu. str.	10 cum.	7 cum., 3 str.	10 cu. str.	------	------	22
9 cu. str.	6 cum.	4 cir., 6 str.	2 cir., 8 str.	10 str.	10 str.	------	------	23
1 cum.	1 cum.	1 cum.	1 cum.	1 cum.	0	------	------	24
0	0	2 ci. str.	2 ci. str.	3 str.	4 ci. str.	------	------	25
2 cir.	2 ci. str.	6 ci. str.	9 ci. str.	7 ci. str., 2 cum.	6 ci. str., 2 cum.	.—*	.—*	26
3 cum.	2 cum.	7 ci. cu.	7 cu. str.	8 cir. cu.	9 ci. cu.	------	------	27
2 cum.	2 cum.	8 cum.	4 ci. str., 2 cum.	8 cu. str.	7 cu. str.	------	------	28
5 cum.	7 cum.	8 cum.	4 cum.	2 cum.	8 cum.	------	------	29
0	1 cum.	0	1 cum.	1 cum.	3 cum.	.04	1.0	30
6.7	6.6	6.5	6.4	6.5	6.9	------	------	
------	------	------	------	------	------	0.47	11.8	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
8 ci. str.	8 ci. str.	8 ci. cu.	8 cum.	10 cum.	10 cum.	7.4	1
10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.	9.3	2
8 str.	10 str.	5 str.	10 nim.	10 nim.	10 nim.	9.6	3
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	9.6	4
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	5
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	10.0	6
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	7
10 nim.	10 str.	10 str.	10 str.	10 str.	9 str.	10.0	8
2 cum.	3 cir., 2 cum.	10 str.	10 str.	10 str.	7 cir., 3 str.	6.9	9
8 cum.	7 cum.	3 cum.	2 cum.	1 cu...	1 cum.	5.5	10
0	0	0	0	0	0	1.7	11
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	6.9	12
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	13
3 ci. str.	1 ci. str.	0	0	0	0	4.1	14
2 ci. str.	3 cum.	4 cum.	3 cum.	0	0	0.1	15
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	9.3	16
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	17
10 nim.	10 nim.	10 str.	3 str.	0	0	8.9	18
0	3 ci. cu.	10 cum.	10 cum.	10 cum.	10 str.	1.8	19
0	0	0	0	0	0	2.9	20
10 nim.	10 str.	10 str.	10 str.	10 str.	10 str.	8.0	21
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	10.0	22
10 str.	10 str.	10 str.	8 str.	7 str.	7 str.	9.5	23
0	0	0	0	0	0	2.5	24
4 str.	4 str.	3 cir.	3 cir.	3 cir.	2 cir.	2.3	25
10 nim.	10 str.	10 str.	1 cum., 2 str.	2 cir., 1 cum.	4 cir.	3.5	26
8 cum.	1 cum.	1 cum.	1 cum.	0	0	5.3	27
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	7.8	28
10 cum.	5 cir., 5 cum.	10 str.	10 str.	10 str.	10 str.	6.4	29
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	5.3	30
7.4	7.4	7.5	7.0	6.8	6.8	6.9	

* Inappreciable.

OCTOBER, 1882.

TABLE CXLVIII.—*Amount, kind, and direction of clouds and amount of precipitation, October, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 str.
2	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
3	10 nim.	10 nim.	10 str.	10 str.	10 str.	10 str.
4	8 cir.	3 cir., 7 cum.	10 cir.	10 cir.	10 str.	10 str.
5	2 cir.	1 cir.	1 cir.	0	0	0
6	0	0	0	0	0	0
7	0	8 cir.	3 cir., 7 str.	10 str.	10 str.	10 cir.
8	0	0	0	0	0	0
9	0	0	0	1 cum.	2 cum.	0
10	2 str.	2 str.	10 str.	10 str.	6 str.	10 str.
11	3 str.	2 str.	1 str.	1 str.	5 str.	8 str.
12	0	0	0	4 ci. str.	4 ci. str.	7 cum.
13	10 str.	10 str.	10 str.	10 str.	8 cum.	8 cum.
14	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
15	10 str.	10 str.	10 nim.	10 nim.	10 str.	10 str.
16	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
17	8 str.	8 str.	5 str.	2 str.	1 str.	1 cum.
18	4 cum.	5 cum.	10 str.	10 str.	10 str.	10 str.
19	3 str.	4 str.	0	0	0	2 str.
20	0	0	2 cum.	8 str.	10 str.	10 str.
21	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
22	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
23	0	0	0	0	0	7 cu. str.
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	10 cum.	9 cum.	1 cir.	0	0	6 cum.
28	3 cir., 1 cum.	3 cir.	2 cir.	2 cir.	1 cir.	0
29	10 str.	10 str.	10 cum.	10 cum.	10 cir.	5 cum.
30	1 cum.	1 cum.	1 cum.	3 cum.	3 cum.	2 cum.
31	4 cum.	8 cum.	4 cum.	7 cum.	10 cum.	10 cum.
Means	4.8	5.2	5.1	5.4	5.5	6.0
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	5 ci. cum., 2 str.	4 ci. cu.	2 cir.	1 cir.	6 cir.	7 ci. cu.
2	10 cu. str.	10 str.	10 str.	10 str.	10 str.	10 str.
3	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
4	2 cir.	4 cum.	8 cu. str.	7 cu. str.	4 str.	4 str.
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	2 cir.	1 cir.	1 cir.	1 cir.	1 cir.	1 cir.
10	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
11	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
12	6 cum.	7 cum.	3 str.	2 cum.	1 cum.	2 cum.
13	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
14	10 str.	10 str.	10 str.	10 str.	3 str.	10 str.
15	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
16	2 cum.	2 cum.	0	0	8 cum.	10 str.
17	1 cum.	1 cum.	8 cum.	8 cum.	4 cum.	1 cum.
18	2 cum.	2 cum.	4 cum.	3 str.	4 str.	3 str.
19	0	0	1 str.	1 str.	0	0
20	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
21	5 cum.	2 cum.	0	0	2 str.	2 str.
22	10 str.	7 str.	7 str.	0	1 str.	0
23	10 str.	10 str.	10 str.	10 str.	10 str.	3 str.
24	3 cum.	2 cum.	1 cum.	0	0	0
25	2 cum.	1 cum.	1 cum.	1 cum.	0	0
26	4 cum.	5 cum.	6 cum.	7 cum.	8 cum.	8 cum.
27	10 str.	10 str.	10 str.	8 cum.	8 cum.	5 cum.
28	0	1 cum.	1 cum.	4 ci. str.	5 cum.	10 cum.
29	1 str.	0	0	0	10 str.	10 str.
30	0	0	0	0	0	0
31	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
Means	5.1	4.6	4.8	4.6	5.0	5.0

OCTOBER, 1882

TABLE CXLVIII.—*Amount, kind, and direction of clouds and amount of precipitation, October, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
10 str.	10 nim.	10 nim.	10 nim.	4 cir., 5 str.	7 str.	.01	0.2	1
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.01	0.2	2
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.02	0.5	3
10 str.	4 cir., 6 str.	5 str.	10 str.	10 nim.	10 nim.	.01	0.2	4
3 cum.	6 cum.	5 cum.	1 cir., 2 cum.	0	0	------	------	5
0	0	0	0	0	0	------	------	6
7 cir.	5 cir.	2 cum.	0	0	0	------	------	7
0	1 ci. str.	2 cir.	1 cir.	1 cir.	1 cir.	------	------	8
0	2 cum.	3 cir.	3 ci. cu.	1 cir.	3 cir.	------	------	9
10 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.	.03	0.8	10
10 str.	8 str.	7 cir.	4 cir., 2 cum.	7 cum.	8 str.	------	------	11
10 cum.	10 cum.	4 cir., 3 cum.	5 cum.	4 cum.	5 ci. cu., 2 cum.	------	------	12
8 cum.	10 str.	10 str.	10 str.	10 str.	10 str.	------	------	13
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	------	------	14
10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.08	2.0	15
10 str.	1 cum.	6 ci. str.	4 ci. str.	3 cum.	2 cum.	.03	0.8	16
1 cum.	1 cum.	1 cum.	5 cum.	0	0	------	------	17
2 str.	2 str.	2 str.	8 cum.	7 cum.	3 cum.	------	------	18
5 str.	3 str.	3 str.	2 str.	2 str.	0	------	------	19
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	.01	0.2	20
5 str.	4 str.	4 str.	4 str.	4 str.	5 str.	------	------	21
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	—*	—*	22
10 cu. str.	10 cum.	7 cu. str.	9 cu. str.	10 str.	10 str.	------	------	23
0	0	1 cum.	2 cum.	3 cum.	3 cu. str.	------	------	24
1 cum.	1 cum.	1 cum.	1 cum.	1 cum.	1 cum.	------	------	25
0	1 cir.	2 cum.	2 cum.	3 cum.	3 cum.	------	------	26
10 cum.	10 cum.	9 cum.	10 cum.	10 cu. str.	10 str.	------	------	27
0	1 str.	1 str.	1 str.	0	0	------	------	28
1 str.	2 str.	8 str.	10 str.	6 str.	2 str.	------	------	29
0	0	0	0	0	0	------	------	30
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	.04	1.0	31
5.9	5.7	5.7	5.9	5.5	5.3	------	------	
------	------	------	------	------	------	0.24	5.9	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
5 ci. str.	2 cir., 4 str.	6 cu. str.	4 cum., 4 str.	8 cu. str.	7 cu. str.	7.6	1
10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	2
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	6 cum., 4 str.	10.0	3
8 str.	10 str.	10 str.	6 str.	3 str.	0	7.4	4
0	0	0	0	0	0	0.9	5
0	0	0	0	0	0	0.0	6
0	0	0	0	0	0	2.6	7
0	0	0	0	0	0	0.2	8
0	0	0	2 str.	4 str.	4 str.	1.3	9
10 nim.	10 nim.	10 nim.	10 nim.	5 str.	5 str.	8.8	10
10 str.	10 str.	4 str.	3 str.	0	0	6.4	11
5 cu. str.	9 str.	10 str.	10 str.	10 str.	10 str.	5.5	12
10 str.	10 str.	10 str.	5 str.	6 str.	10 str.	9.4	12
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	9.7	14
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	15
10 str.	10 str.	10 str.	10 str.	10 str.	3 str.	6.7	16
1 cum.	1 cum.	1 cum.	3 cum.	1 cum.	1 cum.	2.5	17
5 str.	7 str.	3 str.	2 str.	0	0	4.5	18
0	0	0	0	0	0	1.0	19
10 nim,	10 nim.	10 nim.	10 nim.	10 str.	10 str.	8.8	20
6 str.	7 str.	1 str.	3 str.	10 str.	10 str.	5.6	21
0	0	0	0	1 cir.	0	5.7	22
3 ci. cu.	6 str.	10 str.	0	0	0	5.4	23
0	0	3 cum.	8 cum.	3 cum.	0	1.2	24
0	0	0	0	0	0	0.4	25
8 cum.	10 cum.	10 cum.	10 cum.	10 cum.	7 cum.	4.3	26
3 cum.	3 cum.	3 cum.	4 cum.	4 cum.	2 cum.	6.5	27
10 cum.	10 str.	10 str.	10 str.	10 str.	10 str.	4.0	28
8 ci. cu.	1 cum.	0	0	0	0	4.8	29
0	0	0	0	0	0	0.4	30
10 str.	10 str.	10 str.	10 str.	10 str.	10 nim.	9.3	31
5.2	5.5	5.0	5.0	4.7	4.2	5.19	

*Inappreciable.

NOVEMBER, 1882.

TABLE CXLIX.—*Amount, kind, and direction of clouds and amount of precipitation, November, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
2	0	0	0	0	6 cum.	0
3	6 str.	10 str.	6 str.	5 str.	2 str.	2 str.
4	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	6 str.	7 str.	8 str.	10 nim.	10 nim.	8 str.
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	4 str.	10 str.	10 str.	1 str.	10 nim.	0
14	0	0	0	0	0	0
15	4 str.	4 str.	2 str.	1 str.	1 str.	2 str.
16	0	0	0	0	0	0
17	1 str.	1 str.	1 str.	1 str.	1 str.	1 str.
18	0	0	0	0	0	0
19	0	3 str.	3 str.	3 str.	3 str.	3 str.
20	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 str.
21	2 ci. str.	2 str.	2 str.	2 str.	2 str.	2 str.
22	0	0	1 cir.	1 cir.	0	0
23	1 cir.	1 cir.	1 cir.	1 ci. str.	1 ci. str.	2 ci. str.
24	3 cir.	3 cir.	3 cir.	4 cir.	2 cir.	1 cir.
25	6 cum.	3 cum.	3 cum.	3 cum.	2 cum.	1 cum.
26	2 cir.	1 cir.	4 cir.	5 cir.	0	0
27	0	0	0	0	0	0
28	6 cir.	4 cir.	3 cir.	2 cir.	4 cir.	3 cir.
29	2 str.	3 str.	1 str.	0	0	0
30	0	0	0	0	0	0
Means	2.4	2.7	2.6	2.5	2.4	1.8
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	5 str.	7 str.	8 str.	10 str.	6 str.	8 str.
2	0	0	1 str.	0	0	0
3	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
4	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
5	0	0	1 str.	5 str.	5 str.	10 str.
6	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
7	10 str.	2 str.	2 cum.	2 str.	0	0
8	3 str.	2 str.	2 str.	2 str.	0	0
9	0	0	2 str.	2 str.	0	0
10	0	0	0	0	0	0
11	3 str.	3 str.	3 str.	0	0	0
12	2 str.	2 str.	3 str.	4 str.	1 str.	0
13	2 str.	4 str.	2 str.	1 str.	0	0
14	4 cir., 6 str.	10 str.	10 str.	10 str.	10 str.	10 str.
15	3 str.	9 str.	10 str.	4 str.	4 str.	3 str.
16	0	0	0	0	0	0
17	0	1 str.	0	0	0	0
18	4 cir.	1 cir.	0	0	1 str.	2 str.
19	7 str.	6 str.	8 str.	10 str.	10 str.	8 str.
20	1 cir., 2 str.	1 cir.	1 cir.	3 cir.	6 cir.	8 cir.
21	0	0	0	0	0	0
22	0	1 cir.	1 cir.	1 cir.	1 cir., 1 ci. cu.	5 cir.
23	5 cir.	5 cum.	10 cum.	10 cum.	10 cum.	10 cum.
24	1 str.	1 str.	1 str.	1 str.	1 cir.	0
25	1 ci. str., 1 str.	2 ci. str.	3 ci. str.	2 ci. str.	3 ci. str.	3 ci. str.
26	0	0	0	0	0	0
27	1 ci. str.	0	0	0	0	3 ci. str.
28	2 str.	1 str.	1 str.	0	1 str.	1 str.
29	0	0	0	0	0	0
30	1 str.	1 str.	1 str.	1 str.	1 str.	1 str.
Means	3.1	3.0	3.3	3.4	3.1	3.4

NOVEMBER, 1882.

TABLE CXLIX.—*Amount, kind, and direction of clouds and amount of precipitation, November, 1882.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation.		Date.
						Inches.	*mm.*	
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	6 str.	.02	0.5	1
3 str.	4 str.	3 str.	3 str.	2 str.	0	-------	-------	2
3 str.	10 str.	10 str.	10 str.	10 str.	10 str.	-------	-------	3
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	-------	-------	4
0	0	0	1 cum.	0	0	-------	-------	5
0	0	2 str.	3 str.	5 str.	10 str.	-------	-------	6
10 str.	10 str.	10 str.	7 str.	4 str.	5 str.	.03	0.8	7
4 str.	3 str.	8 str.	5 str.	3 str.	2 str.	-------	-------	8
0	0	0	0	0	0	-------	-------	9
0	0	0	0	0	0	-------	-------	10
0	0	0	0	0	2 str.	-------	-------	11
0	2 str.	2 str.	2 str.	2 str.	2 str.	-------	-------	12
0	0	1 str.	1 str.	1 str.	1 str.	.—*	.—*	13
0	0	2 cir.	5 cir.	2 cir., 2 str.	3 str.	-------	-------	14
0	0	4 str.	4 str.	6 cu. str.	8 str.	-------	-------	15
0	0	0	0	0	0	-------	-------	16
0	0	0	0	3 str.	3 str.	-------	-------	17
0	0	0	0	0	3 cir.	-------	-------	18
3 str.	3 str.	3 str.	4 str.	8 str.	10 str.	-------	-------	19
7 str.	4 str.	2 str.	1 str.	3 str.	3 str.	.06	1.5	20
2 str.	0	1 str.	1 str.	1 str.	0	-------	-------	21
0	0	0	0	2 cum.	0	-------	-------	22
2 ci. str.	0	3 cum., 1 str.	3 cum., 1 str.	3 cum., 1 str.	2 ci. str.	-------	-------	23
0	0	0	1 str.	1 str.	1 str.	-------	-------	24
1 cum.	0	1 cu. str.	1 str.	1 str.	1 ci. str., 1 str.	-------	-------	25
0	0	0	0	0	0	-------	-------	26
0	2 cir.	1 cir.	1 str.	1 str.	1 str.	-------	-------	27
5 cir.	4 cir.	1 cir., 1 str.	1 cir., 1 str.	1 cir., 1 str.	1 cir., 1 str.	-------	-------	28
0	0	0	0	0	0	-------	-------	29
0	1 cir.	0	0	0	0	-------	-------	30
2.0	2.1	2.5	2.5	2.7	2.9	-------	-------	
-------	-------	-------	-------	-------	-------	0.11	2.8	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
8 str.	8 str.	6 str.	5 str.	4 str.	2 cir.	8.0	1
2 str.	4 str.	4 str.	3 cir.	2 cir.	6 str.	1.8	
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	8.5	3
2 str.	1 str.	1 str.	0	0	0	7.7	4
5 str.	0	0	0	0	0	1.1	5
10 str.	8 str.	5 str.	5 str.	5 str.	5 str.	4.9	6
0	0	0	0	0	0	4.6	7
0	0	0	0	0	0	1.4	8
0	0	0	0	0	0	0.2	9
0	0	0	0	0	0	0.0	10
0	0	0	0	0	0	0.6	11
0	0	0	0	0	0	0.9	12
1 str.	1 str.	1 str.	0	0	0	2.4	13
3 str.	8 str.	10 str.	6 str.	5 str.	10 str.	4.8	14
0	0	0	0	0	0	2.9	15
0	0	0	0	0	0	0.0	16
0	0	0	0	0	0	0.5	17
2 str.	0	0	0	1 str.	2 str.	0.7	18
7 str.	6 str.	5 str.	8 str.	8 str.	7 str.	5.7	19
9 cir.	10 cir.	10 cir.	3 cir.	2 cir.	1 cir.	5.7	20
0	0	0	0	0	0	0.7	21
3 cir.	2 cir.	2 cir.	1 cir.	1 cir.	1 cir.	1.0	22
10 cum.	10 cum.	8 cum.	8 ci. str.	5 ci. str.	5 ci. str.	5.0	23
0	0	0	0	0	0	1.0	24
3 ci. str.	4 ci. str.	7 ci. str.	8 ci. str.	8 ci. str.	8 ci. str.	3.2	25
0	0	0	0	0	0	0.5	26
3 ci. str.	3 ci. str.	3 ci. str.	3 ci. str.	3 ci. str.	3 ci. str.	1.2	27
0	2 ci. str.	6 ci. str.	6 ci. str.	2 ci. str.	2 ci. str.	2.0	28
0	0	0	0	0	0	0.2	29
1 str.	1 str.	1 str.	1 cir.	3 cir.	4 cir.	0.8	30
2.6	2.6	2.6	2.2	2.0	2.2	2.62	

* Inappreciable.

DECEMBER, 1882.

TABLE CL.—*Amount, kind, and direction of clouds and amount of precipitation, December, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	7 ci. str.	5 ci. str.	3 ci. str.	4 str.	3 ci. str.	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	2 str.	2 str.	4 str.	7 str.	8 str.	8 str.
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	6 str.	6 str.
15	0	0	0	0	0	0
16	10 str.	9 str.	4 str.	4 str.	3 str.	2 str.
17	0	0	0	0	0	0
18	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
19	2 cir.	0	0	0	1 cir.	1 cir.
20	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
21	10 nim.	6 str.	0	0	0	0
22	8 cir.	7 cir.	2 cir.	2 cir.	1 cir.	1 cir.
23	0	0	0	0	3 cir.	6 cir.
24	0	0	0	0	0	0
25	8 cum.	10 str.	10 str.	10 str.	10 str.	10 str.
26	8 str.	10 str.	10 str.	10 str.	10 str.	10 str.
27	4 cir.	4 cir.	2 str.	0	5 cu. str.	1 ci. str.
28	0	2 ci. str.	2 ci. str.	3 ci. str.	3 ci. str.	3 ci. str.
29	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
30	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
31	2 str.	0	0	0	0	0
Means	3.3	3.1	2.5	2.6	3.0	2.8
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	4 str.	3 str.	3 str.	2 str.	2 str.	2 str.
4	5 str.	2 str.	1 str.	4 str.	4 str.	3 str.
5	0	1 str.	4 str.	3 str.	3 str.	3 str.
6	6 str.	5 str.	3 str.	2 str.	2 str.	2 str.
7	7 str.	6 str.	5 str.	5 str.	3 str.	3 str.
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	2 str.	3 str.
12	0	0	0	0	0	0
13	0	0	0	0	1 cir.	1 str.
14	0	0	0	0	2 str.	1 str.
15	0	2 str.	2 str.	10 str.	5 str.	3 str.
16	1 str.	1 str.	1 str.	1 str.	1 str.	1 str.
17	2 str.	2 str.	2 str.	2 str.	3 str.	4 str.
18	1 str.	2 cum.	2 cu. str.	2 cu. str.	3 cu. str.	3 cu. str.
19	10 str.	8 str.	10 str.	10 str.	10 str.	10 str.
20	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
21	0	1 ci. str.	0	0	0	0
22	7 cu. str.	10 str.	10 str.	10 str.	8 str.	10 str.
23	0	3 cir.	3 cir.	2 cir.	5 cir.	7 cir.
24	10 cir.	10 ci. str.	10 ci. str.	10 ci. str.	9 ci. str.	4 cum.
25	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
26	10 cir.	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	8 str.	6 str.	8 str.
29	2 str.	0	0	0	0	2 str.
30	10 str.	10 str.	6 str.	2 str.	3 str.	1 str.
31	0	0	0	0	0	0
Means	3.1	2.8	2.6	3.0	3.0	2.9

DECEMBER, 1882.

TABLE CL.—*Amount, kind, and direction of clouds and amount of precipitation, December, 1882.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation.		Date.
						Inches.	*mm.*	
0	0	1 str.	2 str.	2 str.	2 str.	------	------	1
0	0	0	0	0	0	------	------	2
0	0	0	0	0	4 str.	------	------	3
5 str.	3 str.	10 str.	10 str.	10 str.	4 str.	------	------	4
0	0	1 str.	0	0	0	------	------	5
0	0	3 str.	3 str.	6 str.	8 str.	------	------	6
0	2 str.	4 str.	4 str.	5 str.	4 str.	------	------	7
0	0	0	0	0	0	------	------	8
0	0	0	0	0	0	------	------	9
0	0	0	0	0	0	------	------	10
0	0	0	0	0	0	------	------	11
0	0	0	0	0	0	------	------	12
0	0	0	0	0	0	------	------	13
6 str.	0	0	0	0	0	------	------	14
0	1 str.	1 str.	0	0	0	------	------	15
2 str.	1 str.	1 str.	1 str.	1 str.	1 str.	------	------	16
0	0	0	0	0	1 str.	------	------	17
10 str.	10 str.	10 str.	4 str.	2 str.	2 str.	------	------	18
2 cir.	5 cir.	4 str.	4 str.	4 str.	8 str.	------	------	19
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.17	4.3	20
0	0	0	0	0	0	.—*	.—*	21
4 cir.	5 cir.	3 cir.	1 cir.	8 cu. str.	9 cu. str.	------	------	22
8 cir.	6 cir.	2 cir.	0	0	0	------	------	23
2 cir.	5 cir.	3 cir.	4 cir.	7 cir.	7 cir.	------	------	24
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.02	0.5	25
10 str.	10 str.	10 str.	7 cu. str.	4 cu. str.	8 cir.	------	------	26
0	0	3 cir.	2 cir.	2 cir.	0	------	------	27
1 ci. str.	2 ci. str.	2 cir.	1 cir.	0	0	------	------	28
10 nim.	10 nim.	10 nim.	10 nim.	10 str.	8 str.	.04	1.0	29
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	------	------	30
0	0	1 cir.	2 cir.	2 cir.	0	------	------	31
2.9	3.2	3.5	2.9	3.1	3.1	------	------	
						0.23	5.8	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
0	0	0	0	0	0	1.2	1
0	0	0	0	0	0	0.0	2
2 str.	2 str.	2 str.	2 str.	2 str.	2 str.	1.3	3
2 str.	2 str.	2 str.	1 str.	1 str.	1 str.	4.2	4
3 str.	3 str.	4 str.	3 str.	3 str.	2 str.	1.4	5
2 str.	1 str.	1 str.	1 str.	1 str.	0	1.9	6
3 str.	1 str.	1 str.	0	0	0	2.2	7
0	0	0	0	0	0	0.0	8
0	0	0	0	0	0	0.0	9
0	0	0	0	0	0	0.0	10
4 str.	3 str.	1 str.	0	0	0	0.5	11
0	0	0	0	0	0	0.0	12
2 str.	2 str.	3 str.	3 str.	3 str.	2 str.	0.7	13
0	0	0	0	0	0	2.4	14
3 str.	3 str.	3 str.	3 str.	2 str.	2 str.	1.7	15
1 str.	1 str.	1 str.	1 str.	2 str.	2 str.	2.2	16
4 str.	4 str.	4 str.	4 str.	4 str.	8 str.	1.8	17
2 cir.	3 ci. str.	4 ci. str.	3 str.	3 str.	3 str.	5.8	18
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	6.2	19
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	20
0	0	2 cir.	2 cir.	2 cir.	2 cir.	1.0	21
10 str.	10 str.	8 str.	1 str.	0	0	5.6	22
7 cir.	7 cir.	2 cir.	0	0	0	2.5	23
4 cum.	9 cu. str.	9 cu. str.	9 cu. str.	9 cu. str.	9 ci. str.	5.2	24
10 str.	10 str.	10 str.	10 str.	10 str.	7 str.	9.8	25
0	0	0	3 cir.	2 cir.	1 cir.	5.1	26
0	0	0	0	0	0	1.0	27
5 str.	5 cum.	4 str.	3 str.	9 str.	10 str.	3.2	28
2 str.	2 str.	5 str.	10 str.	10 str.	10 str.	6.7	29
1 str.	1 str.	1 str.	1 str.	4 str.	4 str.	6.8	30
0	0	0	0	0	0	0.3	31
2.8	2.9	2.8	2.6	2.8	2.6	2.9	

* Inappreciable.

JANUARY, 1883.

TABLE CLI.—*Amount, kind, and direction of clouds and amount of precipitation, January, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\varphi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	0	0	0	0	0	0
2	2 str.	2 str.	2 str.	1 str.	5 str.	3 str.
3	1 str.	1 str.	1 str.	1 str.	1 str.	1 str.
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	10 str.	10 str.	3 str.	3 str.	2 str.	2 str.
7	0	0	2 str.	2 str.	1 str.	1 str.
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	1 str.	0	3 str.	5 str.	2 str.	1 str.
12	5 str.	3 str.	10 str.	8 str.	5 str.	4 str.
13	6 str.	5 str.	3 str.	2 str.	1 str.	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	4 cir.	10 nim.	10 nim.	10 nim.	10 str.	10 nim.
18	10 nim.	10 nim.	10 nim.	10 nim.	10 str.	8 str.
19	3 str.	3 str.	2 ci. str.	2 ci. str.	3 cir.	3 cir.
20	0	3 ci. str.	3 ci. str.	5 ci. str.	5 ci. str.	4 ci. cu.
21	10 cu. str.	10 cu. str.	10 cum.	8 cu. str.	10 str.	10 nim.
22	8 str.	8 str.	10 str.	10 str.	10 str.	10 str.
23	10 nim.	10 nim.	10 nim.	10 nim.	10 str.	3 cum., 5 str.
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	1 ci. str.	1 ci. str.	2 ci. str.	4 ci. str.	4 ci. str.	4 ci. str.
27	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
28	4 str.	4 str.	4 cu. str.	5 cu. str.	10 str.	10 str.
29	5 str.	3 str.	5 str.	10 nim.	10 nim.	10 nim.
30	5 str.	5 str.	5 str.	8 str.	9 str.	8 str.
31	0	0	0	0	0	0
Means	3.1	3.2	3.4	3.6	3.8	3.4
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	2 str.	3 str.	3 str.	2 str.	3 cu. str.	2 cu. str.
2	1 str.	1 str.	0	0	0	0
3	0	0	1 str.	1 str.	1 str.	0
4	1 str.	3 str.	2 str.	2 str.	2 str.	2 str.
5	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
6	1 str.	1 str.	1 str.	0	0	0
7	0	0	0	0	2 cir.	2 cir.
8	3 str.	3 str.	3 str.	2 str.	0	0
9	0	0	0	0	0	0
10	0	0	0	0	1 str.	0
11	0	0	0	0	2 str.	6 str.
12	10 nim.	3 str.	4 str.	5 str.	5 str.	4 str.
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	4 cir., 3 str.	3 cir.	1 cir.	8 cir.	6 cir.	5 cir.
17	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
18	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
19	10 cir.	10 cir.	0	0	1 cir.	1 cir.
20	7 cir.	3 cir.	7 cir.	3 cir., 7 cu. str.	10 cu. str.	10 cu. str.
21	9 str.	10 str.	10 str.	3 str.	0	0
22	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
23	4 str.	3 str.	0	0	0	0
24	2 str.	2 str.	2 str.	1 str.	0	0
25	3 str.	3 str.	1 str.	1 str.	3 str.	2 str.
26	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
27	2 str.	1 str.	1 str.	1 str.	1 str.	1 cum.
28	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
29	10 nim.	10 nim.	10 nim.	3 str.	2 str.	2 str.
30	10 str.	8 str.	10 str.	7 str.	0	0
31	1 str.	1 str.	0	0	0	0
Means	4.6	4.1	3.7	3.4	3.2	3.1

JANUARY, 1883.

TABLE CLI.—*Amount, kind, and direction of clouds and amount of precipitation, January, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^{h} 19^{m}$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
0	2 str.	3 str.	2 str.	2 str.	2 str.	------	------	1
2 str.	1 str.	1 str.	1 str.	1 str.	1 str.	------	------	2
1 str.	0	0	0	0	0	------	------	3
0	0	0	0	0	0	------	------	4
0	4 str.	5 str.	9 str.	10 str.	10 str.	------	------	5
1 str.	1 str.	1 str.	2 str.	2 str.	2 str.	------	------	6
2 str.	1 str.	0	0	0	0	------	------	7
0	0	0	1 str.	2 str.	2 str.	------	------	8
0	0	0	0	0	0	------	------	9
0	0	0	0	0	0	------	------	10
2 str.	0	0	0	0	0	------	------	11
10 str.	10 nim.	10 nim.	10 nim.	4 str.	8 str.	.—*	.—*	12
0	0	0	0	0	0	------	------	13
0	0	0	0	0	0	------	------	14
0	0	0	0	0	0	------	------	15
0	0	1 str.	1 cu. str.	1 cu. str.	6 cu. str.	------	------	16
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.06	1.5	17
6 str.	8 str.	10 nim.	10 nim.	10 nim.	10 nim.	.02	0.5	18
2 ci. str.	1 ci. str.	1 cu. str.	10 cir.	8 cir.	10 cir.	------	------	19
3 ci. str.	2 cir.	1 cir.	3 cir.	2 cir.	2 cir.	------	------	20
10 cu. str.	10 cu. str.	10 cu. str.	10 nim.	10 nim.	8 str.	.01	0.2	21
10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 str.	.03	0.8	22
10 str.	10 str.	10 str.	10 nim.	10 nim.	10 nim.	.01	0.2	23
10 str.	5 str.	4 str.	6 str.	4 str.	4 str.	------	------	24
0	0	2 str.	1 str.	0	3 str.	------	------	25
3 ci. str.	1 str.	2 str.	1 str.	4 str.	8 str.	.—*	.—*	26
10 nim.	10 nim.	7 cu. str.	5 cir. str.	4 ci. str.	3 cir., 2 str.	.03	0.8	27
10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.04	1.0	28
4 str.	3 str.	10 nim.	10 nim.	10 nim.	10 nim.	.04	1.0	29
7 str.	6 str.	7 str.	9 str.	10 str.	10 str.	------	------	30
0	0	0	0	0	0	------	------	31
3.6	3.4	3.7	4.2	4.0	4.5	------	------	
------	------	------	------	------	------	0.24	6.0	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
0	0	0	2 str.	1 str.	2 str.	1.3	1
0	1 str.	0	0	2 str.	2 str.	1.2	2
0	0	0	0	0	0	0.4	3
1 str.	1 str.	0	0	0	0	0.6	4
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	6.6	5
0	0	0	0	0	0	1.8	6
2 cir.	2 cir.	0	0	0	0	0.7	7
0	0	0	0	0	0	0.7	8
2 str.	1 str.	1 str.	1 str.	0	0	0.2	9
0	0	1 str.	1 str.	2 str,	2 str.	0.3	10
5 str.	4 str.	10 nim.	10 nim.	10 nim.	6 str.	2.8	11
4 str.	3 str.	3 str.	2 str.	2 str.	2 str.	5.6	12
0	0	0	0	0	0	0.7	13
0	0	0	0	0	0	0.0	14
0	0	0	0	0	0	0.0	15
8 cir.	6 cir.	5 cir.	6 cir.	5 cir.	3 cir.	3.0	16
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	9.8	17
10 nim.	10 nim.	9 str.	8 str.	4 str.	4 str.	9.0	18
2 cir.	8 cir.	2 cir.	2 cir.	2 cir.	1 cir.	3.3	19
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	5.8	20
0	2 ci. str.	2 ci. str.	3 cir.	10 ci. str.	10 ci. str.	7.3	21
10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.	9.8	22
0	0	0	0	0	0	5.2	23
0	0	0	0	0	0	1.7	24
1 cir.	1 cir.	1 cir.	0	0	1 cir.	1.0	25
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	6.4	26
7 str.	7 str.	1 str.	0	4 str.	4 str.	5.4	27
10 nim.	4 str.	8 str.	10 nim.	10 nim.	10 nim.	8.8	28
0	0	0	3 str.	4 str.	5 str.	5.8	29
0	0	0	0	0	0	5.2	30
0	0	0	0	0	0	0.1	31
3.3	3.1	3.0	3.2	3.4	3.3	3.6	

* Inappreciable

FEBRUARY, 1883.

TABLE CLII.—*Amount, kind, and direction of clouds and amount of precipitation, February,* 1883.

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 45'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	4 str.	5 str.	5 str.	5 str.	7 str.	7 str.
4	5 str.	10 str.	10 str.	10 nim.	10 nim.	10 nim.
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	2 str.	4 str.
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 str.
13	0	0	0	8 cum.	5 cum.	10 str.
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	3 cir.	3 ci. str.
18	6 cir.	3 cir.	4 cir.	3 cir.	2 cir.	7 cir.
19	2 ci. cu.	0	0	0	0	0
20	4 cu. str.	7 cu. str.	9 cu. str.	6 cu. str.	6 cu. str.	10 cu. str.
21	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
22	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
23	4 cir.	1 cir.	0	0	0	1 str.
24	0	0	0	0	0	1 str.
25	0	0	0	0	0	0
26	0	0	0	10 str.	10 str.	10 str.
27	0	0	0	0	0	0
28	2 str.	4 str.	2 str.	2 str.	2 str.	3 str.
Means	2.0	2.1	2.1	2.6	2.8	3.4
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	3 str.	3 str.	2 str.	0	0	0
2	5 str.	5 str.	5 str.	5 str.	7 str.	7 str.
3	3 str.	3 str.	3 str.	3 str.	2 str.	2 str.
4	0	0	0	0	0	0
5	3 str.	3 str.	4 str.	5 str.	5 str.	2 str.
6	3 str.	3 str.	3 str.	4 str.	2 str.	2 str.
7	3 str.	3 str.	3 str.	3 str.	2 str.	2 str.
8	1 ci. str.	1 ci. str.	1 cum.	1 cum.	1 cum.	1 cum.
9	1 cir.	1 cir.	1 cir.	1 cir.	0	0
10	2 cum.	0	0	0	0	0
11	3 cir.	2 cir.	1 cir.	1 cir.	1 cir.	1 cir.
12	10 str.	10 str.	10 str.	10 str.	1 str.	1 str.
13	2 cir.	2 cir.	2 cir.	1 cir.	1 cir.	1 cir.
14	1 cir.	1 cir.	3 cir.	3 cir.	3 cir.	2 cir.
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	8 cu. str.	7 cum.	5 ci. str.	2 str.	5 cir.	10 cir.
18	8 ci. cu.	8 cum.	4 cum.	0	0	0
19	3 str.	5 str.	3 str.	2 str.	2 str.	1 str.
20	10 str.	10 str.	10 str.	10 str.	10 str.	10 nim.
21	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 str.
22	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
23	1 str.	1 str.	1 str.	1 str.	0	0
24	0	1 str.	1 str.	1 str.	2 str.	2 str.
25	1 str.	1 str.	0	0	0	0
26	10 str.	10 str.	6 str.	2 str.	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
Means	3.6	3.6	3.1	2.7	2.3	2.3

FEBRUARY, 1883.

TABLE CLII.—*Amount, kind, and direction of clouds and amount of precipitation, February,* 1883.

Washington mean time. Reduce to local mean time by adding 49m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
0	1 str.	1 str.	1 str.	2 str.	2 str.	-----	-----	1
2 str.	4 str.	4 str.	4 str.	5 str.	5 str.	-----	-----	2
5 str.	4 str.	3 str.	3 str.	3 str.	3 str.	-----	-----	3
10 nim.	6 str.	1 str.	0	0	0	.04	1.0	4
0	2 cum.	2 str.	3 cu. str.	4 cu. str.	2 str.	-----	-----	5
0	0	1 str.	1 str.	1 str.	2 str.	-----	-----	6
2 str.	3 str.	3 str.	3 str.	3 str.	3 str.	-----	-----	7
0	0	5 cum.	3 cum.	4 cu. str.	1 cum., 1 str.	-----	-----	8
0	1 str.	0	0	1 cir.	1 cir.	-----	-----	9
1 cir.	3 ci. cu.	1 ci. cu.	0	1 cum.	2 cum.	-----	-----	10
0	0	0	0	3 cir.	3 cir.	.—*	.—*	11
10 str.	9 cu. str.	10 str.	10 str.	10 str.	10 str.	.01	0.2	12
10 nim.	10 nim.	9 str.	8 str.	2 cum.	2 cir.	.—*	.—*	13
0	0	0	0	0	0	-----	-----	14
0	0	0	0	0	0	-----	-----	15
0	0	0	0	0	0	-----	-----	16
1 cum.	3 cu. str.	4 cu. str.	1 str.	4 cu. str.	3 ci. cu., 6 str.	-----	-----	17
2 cir.	3 cir.	3 ci. str.	3 ci. str.	5 ci. cu.	5 ci. cu.	-----	-----	18
2 str.	2 str.	4 str.	10 str.	10 str.	4 str.	-----	-----	19
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.02	0.5	20
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.03	0.8	21
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.05	1.3	22
1 str.	1 str.	1 str.	1 str.	1 str.	1 str.	-----	-----	23
2 str.	3 cir.	1 str.	1 str.	0	0	-----	-----	24
1 str.	1 str.	1 str.	1 str.	1 str.	1 str.	-----	-----	25
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	-----	-----	26
0	0	0	0	0	0	-----	-----	27
5 str.	2 str.	0	0	0	0	-----	-----	28
3.4	3.5	3.4	3.4	3.6	3.5	-----	-----	
-----	-----	-----	-----	-----	-----	0.15	3.8	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
3 str.	2 str.	3 str.	2 str.	0	0	1.0	1
5 str.	5 str.	5 str.	5 str.	5 str.	5 str.	3.2	2
2 str.	0	0	0	0	0	3.0	3
0	0	0	0	0	0	3.0	4
2 str.	3 str.	2 str.	2 str.	2 str.	2 str.	2.0	5
2 str.	2 str.	2 str.	2 str.	2 str.	2 str.	1.4	6
0	0	0	0	0	0	1.4	7
1 cum.	1 str.	1 str.	0	0	0	1.2	8
0	0	0	0	0	0	0.3	9
0	0	0	0	0	0	0.4	10
1 cir.	1 cir.	10 str.	10 nim.	10 nim.	10 nim.	2.4	11
0	0	0	0	0	0	6.7	12
0	0	0	0	0	0	3.0	13
1 str.	0	0	0	0	0	0.6	14
0	0	0	0	0	0	0.0	15
0	0	4 cum.	2 cum.	0	0	0.2	16
10 cir.	10 cir.	10 cir.	10 cir.	8 cir.	10 cir.	5.1	17
0	1 cir.	2 cir.	8 cir.	10 cir.	3 cir.	3.8	18
1 str.	6 str.	3 cum., 4 str.	5 cum., 3 str.	10 str.	8 cum., 2 str.	3.8	19
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	9.2	20
6 cum., 2 str.	10 ci. str.	10 nim.	10 nim.	10 nim.	10 nim.	9.9	21
10 nim.	10 str.	3 str.	1 str.	1 str.	1 str.	8.6	22
0	0	0	0	0	0	0.7	23
2 str.	0	0	0	0	0	0.7	24
0	0	0	0	0	0	0.3	25
0	0	0	0	0	0	4.9	26
0	0	0	0	2 str.	2 str.	0.2	27
1 str.	1 str.	1 str.	0	0	0	1.0	28
2.1	2.2	2.5	2.5	2.5	2.3	2.8	

* Inappreciable.

MARCH, 1883.

TABLE CLIII.—*Amount, kind, and direction of clouds and amount of precipitation, March, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	0	0	0	0	0	0
2	0	0	4 str.	10 str.	10 str.	10 str.
3	0	0	0	2 str.	2 str.	4 ci. str.
4	5 str.	5 str.	8 str.	8 str.	10 str.	10 str.
5	0	0	0	0	2 str.	2 str.
6	0	0	0	0	0	0
7	0	0	0	2 str.	3 str.	3 str.
8	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	10 str.	10 str.	10 str.	10 str.	10 str.	9 str.
13	1 str.	2 str.	3 str.	4 str.	2 str.	1 str.
14	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
15	3 cum.	3 cum.	2 cum.	4 cum.	3 cum.	2 cum.
16	0	1 cum.	0	0	0	1 str.
17	0	0	0	0	2 cum.	3 ci. str.
18	0	1 cum.	1 str.	1 str.	0	0
19	0	0	0	0	0	2 ci. str.
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	10 str.	10 str.	10 str.	10 nim.	10 nim.	10 nim.
23	10 nim.	10 nim.	8 cu. str.	10 cu. str.	8 cu. str.	8 cu. str.
24	2 str.	2 str.	0	0	0	0
25	10 nim.	10 nim.	10 str.	10 nim.	10 nim.	10 nim.
26	10 str.	10 str.	10 str.	10 str.	10 str.	10 nim.
27	10 nim.	10 nim.	10 nim.	10 nim.	8 str.	10 str.
28	10 str.	10 str.	10 str.	10 str.	10 str.	10 nim.
29	10 str.	10 str.	10 str.	10 nim.	10 nim.	10 nim.
30	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
31	2 str.	2 str.	0	0	0	0
Means	4.0	4.1	4.3	4.5	4.5	4.7
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	6 str.	9 str.	8 str.	8 str.	6 str.	5 str.
2	10 nim.	10 nim.	10 nim.	10 nim.	7 str.	5 str.
3	3 str.	10 ci. str.	10 ci. str.	10 str.	10 str.	9 str.
4	10 nim.	10 nim.	10 nim.	10 str.	5 cu. str.	5 cu. str.
5	0	0	0	0	0	0
6	10 str.	7 cir., 3 str.	10 str.	10 str.	10 str.	10 str.
7	3 cir.	5 cir.	10 ci. str.	10 cir.	2 str.	3 str.
8	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	5 ci. str.	5 ci. str.	4 ci. str.	2 cum.	2 cum.	7 cu. str.
12	8 cum.	8 cum.	8 cum.	4 cum.	1 cum.	5 cum.
13	8 ci. str.	10 ci. str.	10 str.	10 str.	10 str.	10 str.
14	3 cum.	8 ci. str.	8 ci. str.	3 ci. str.	4 ci. str.	4 ci. str.
15	10 cir.	10 ci. cu.	8 ci. str.	8 str.	10 str.	10 str.
16	4 ci. str., 4 str.	2 ci. str., 6 str.	2 ci. str., 3 str.	1 str.	1 str.	0
17	1 str.	1 str.	1 str.	1 str.	1 str.	1 str.
18	0	0	0	2 ci. str.	8 cum.	3 cum.
19	1 ci. str.	0	0	0	0	0
20	0	0	0	0	0	0
21	2 cir.	1 cir.	2 cir.	2 cir.	2 cir.	2 cir.
22	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
23	5 cu. str.	5 cu. str.	6 cu. str.	7 cu. str.	7 cu. str.	8 cu. str.
24	0	0	0	2 cir.	2 str.	10 nim.
25	9 str.	10 str.	10 str.	10 str.	9 cu. str.	10 cu. str.
26	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
27	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
28	10 cu. str.	10 str.	10 str.	10 str.	10 nim.	10 nim.
29	8 ci. str.	10 str.	10 str.	10 str.	10 str.	10 nim.
30	0	2 ci. str.	0	0	0	0
31	0	0	0	0	0	0
Means	5.2	5.9	5.8	5.5	5.1	5.4

MARCH, 1883.

TABLE CLIII.—*Amount, kind, and direction of clouds and amount of precipitation, March, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
0	2 str.	2 str.	3 ci. str.	3 ci. str.	4 str.	------	------	1
10 str.	10 str.	10 str.	8 str.	10 str.	10 nim.	.06	1.5	2
4 ci. str.	4 ci. str.	9 ci. str.	8 ci. str.	2 str.	2 str.	------	------	3
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	.04	1.0	4
4 str.	4 str.	2 str.	1 str.	0	0	------	------	5
0	0	3 cir.	3 ci. str., 3 str.	8 ci. str., 2 str.	10 str.	------	------	6
3 str.	3 str.	6 ci. str.	8 ci. str., 2 str.	9 cir., 1 str.	6 cir.	------	------	7
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.05	1.3	8
0	1 ci. cum.	0	0	0	0	------	------	9
0	0	0	0	0	0	------	------	10
0	0	3 cir.	5 ci. str.	5 ci. str.	4 ci. str.	------	------	11
4 str.	6 cu. str.	6 cu. str.	10 cum.	10 cum.	10 cum.	------	------	12
1 str.	0	0	2 cum.	5 ci. str.	8 ci. str.	------	------	13
5 str.	6 str.	10 str.	8 cum.	5 cum.	2 cum.	.—*	.—*	14
1 cum.	1 cum.	0	5 cir.	7 cir.	7 cir.	------	------	15
3 ci. str.	4 ci. str.	6 ci. str.	7 ci. str.	9 ci. str.	5 ci. str., 2 str.	------	------	16
5 ci. str.	6 ci. str.	8 ci. str.	7 cu. str., 2 str.	7 cu. str.	2 cu. str.	------	------	17
2 ci. cum.	2 ci. str.	1 ci. str.	0	0	0	------	------	18
4 cum.	7 cum.	0	0	1 ci. str.	0	------	------	19
0	0	0	0	0	0	------	------	20
1 ci. str.	2 ci. str.	3 cir.	3 cir.	3 cir.	3 cir.	------	------	21
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.14	3.6	22
4 cu. str.	1 cum.	2 cu. str.	4 cu. str.	6 cu. str.	7 cu. str.	.02	0.5	23
1 cir.	1 cir.	3 cir.	1 cir.	0	0	.01	0.2	24
5 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.	.02	0.5	25
10 nim.	10 nim.	10 nim.	5 ci. str., 5 str.	5 ci. str., 3 str.	10 ci. str.	.02	0.5	26
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.11	2.8	27
10 nim.	10 nim.	10 nim.	8 cum.	3 cum.	10 cu. str.	.05	1.3	28
10 str.	8 str.	9 str.	10 str.	8 str.	5 ci. str., 3 str.	.04	1.0	29
10 nim.	10 nim.	0	0	0	0	.05	1.3	30
0	0	0	0	0	0	------	------	31
4.4	4.8	4.9	5.4	5.2	5.2	------	------	
------	------	------	------	------	------	0.61	15.5	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
3 str.	2 str.	2 str.	2 str.	2 str.	2 str.	2.9	1
3 str.	2 str.	1 str.	1 str.	0	0	6.3	2
10 str.	5 str.	5 str.	5 str.	5 str.	5 str.	5.2	3
4 cu. str.	3 cu. str.	3 cu. str.	3 str.	2 str.	0	7.1	4
0	0	0	0	0	0	0.6	5
10 str.	10 str.	4 str.	1 str.	0	0	4.8	6
3 str.	2 str.	4 str.	4 str.	5 str.	10 str.	4.4	7
9 str.	8 str.	5 str.	3 str.	2 str.	1 str.	8.7	8
0	1 str.	0	0	0	0	0.1	9
0	0	0	0	0	0	0.0	10
7 ci. str.	8 str.	10 str.	10 str.	10 str.	10 str.	4.0	11
4 cum.	3 cu. str.	3 ci. str.	2 str.	1 str.	1 str.	6.4	12
8 str.	5 str.	6 ci. str.	4 ci. str.	3 ci. str.	10 cum.	5.1	13
6 str.	10 nim.	10 str.	3 cum.	10 cum.	10 cum.	7.3	14
10 str.	9 str.	1 str.	0	0	0	4.8	15
0	0	0	0	0	0	2.5	16
0	0	0	0	0	0	2.0	17
4 cum.	2 str.	1 str.	0	0	0	1.2	18
0	0	0	0	0	0	0.6	19
0	0	2 cum.	1 cum.	0	0	0.1	20
3 ci. str.	8 str.	10 str.	10 str.	10 str.	10 str.	3.2	21
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	22
10 str.	10 str.	3 str.	3 str.	3 str.	3 str.	6.2	23
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	3.5	24
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	9.7	25
10 nim.	10 nim.	10 cum.	10 cum.	10 cum.	10 str.	9.9	26
10 nim.	10 nim.	10 str.	10 str.	10 str.	10 str.	9.6	27
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	4.9	28
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	9.6	29
1 ci. cum.	2 cum.	4 cum.	0	1 cum.	2 str.	3.8	30
0	0	0	0	0	0	0.2	31
5.3	5.2	4.6	3.9	4.0	4.3	4.8	

* Inappreciable.

APRIL, 1883.

TABLE CLIV.—*Amount, kind, and direction of clouds and amount of precipitation, April, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	6 cum.	8 cum.	8 cum.	7 cum.	7 cum.	6 cum.
5	10 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.
6	1 str.	1 str.	3 cum.	4 cum.	5 cum.	2 cum.
7	0	0	0	0	4 cum.	9 cum.
8	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	1 cum.	0	0	0
12	5 cum.	7 cum.	5 cum.	6 cum.	7 ci. str.	9 ci. str.
13	3 ci. str.	3 cum.	3 cum.	3 cum.	4 str.	1 str.
14	2 cum.	2 cum.	2 cum.	2 cum.	4 cum.	4 cum.
15	2 cum.	1 cum.	0	1 cum.	0	3 cir.
16	0	0	0	0	0	0
17	4 cum.	5 cum.	3 cum.	4 cum.	2 cum.	2 cum.
18	2 cum.	0	0	0	2 cum.	1 cum.
19	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 cum.
20	8 cum.	8 str.	8 str.	2 str.	0	0
21	0	0	0	0	0	0
22	4 cum.	5 cum.	3 cum.	2 cum.	2 cum.	2 cum.
23	5 cir.	5 cir.	3 cir.	2 cir.	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	2 ci. str., 8 cir.	8 cir.	10 cir.	10 str.	10 str.	10 str.
28	10 str.	10 str.	9 str.	8 cir.	8 cir.	8 cir.
29	8 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
30	9 cir.	5 cir.	3 cir.	1 cir.	0	0
Means	3.6	3.6	3.4	3.1	3.2	3.3
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	8 cu. str.	8 cu. str.	5 cu. str.	6 cu. str.	7 cum.	8 cum.
5	9 str.	4 str.	2 str.	3 ci. str.	5 cir.	7 cir.
6	1 ci. str.	1 ci. str.	0	0	0	1 cum.
7	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
8	1 ci. str.	1 ci. str.	0	0	0	0
9	7 cu. str.	5 cu. str.	3 cu. str.	2 str.	1 cum.	1 cum.
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	7 ci. str.	5 ci. str.	6 ci. str.	6 ci. str.	6 ci. str.	5 ci. str.
13	6 cir.	8 cir.	10 cir.	10 cir.	8 cir.	6 cir.
14	7 ci. str.	9 cum.	9 cum.	3 cum.	4 cum.	4 cum., 5 str.
15	6 ci. str.	3 ci. str.	0	0	0	0
16	0	0	0	0	1 cir.	2 cir.
17	0	0	0	0	0	1 str.
18	0	0	1 str.	1 str.	3 cum.	9 cum.
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	2 str.	5 ci. str,	4 ci. str., 4 str.	4 ci. str., 2 str.	10 str.	10 str.
22	8 ci. str.	9 ci. str.	3 ci. str., 7 str.	10 str.	5 cir., 5 str.	10 cir.
23	1 ci. str.	2 ci. str.	0	1 ci. str.	3 cir.	4 cir.
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	5 cir.	8 cir.	10 cir.	10 cir.	10 cum.	10 cum.
27	0	3 cir.	4 cir.	5 cir.	4 cir.	3 cir.
28	1 cum.	1 cum.	0	0	1 cum.	4 cum.
29	0	0	0	0	0	0
30	0	0	0	0	0	0
Means	2.6	2.7	2.6	2.4	2.8	3.3

APRIL, 1883.

TABLE CLIV.—*Amount, kind, and direction of clouds and amount of precipitation, April, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation.		Date.
						Inches.	*mm.*	
0	0	0	0	0	0	----	----	1
0	0	0	1 ci. str.	1 ci. str.	0	----	----	2
0	0	0	0	0	0	----	----	3
9 cum.	10 cum.	10 cum.	2 ci. str., 1 str.	10 cu. str.	8 cu. str.	----	----	4
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 cu. str.	.02	0.5	5
2 cum.	1 cum.	0	0	0	0	----	----	6
10 cum.	10 cum.	10 str.	10 cu. str.	9 cu. str.	10 str.	.04	1.0	7
10 nim.	10 nim.	10 cum.	10 cu. str.	8 ci. str.	3 ci. str.	.02	0.5	8
0	[illegible] str.	0	0	1 cu. str.	4 cu. str.	----	----	9
0	0	0	0	0	0	----	----	10
1 ci. str.	0	1 ci. str.	2 ci. str.	2 ci. str.	0	----	----	11
9 ci. str.	9 ci. str.	9 ci. str.	10 ci. str.	8 ci. str.	7 ci. str.	----	----	12
2 cir., 1 str.	3 cu. str.	1 cir.	0	2 cir.	2 cir.	----	----	13
6 cum.	4 cum.	2 cum.	3 cum.	2 ci. str.	3 ci. str.	----	----	14
3 cir.	6 cir.	4 cir.	4 cir.	7 ci. str.	6 ci. str.	----	----	15
0	0	0	0	0	0	----	----	16
0	0	0	0	0	0	----	----	17
0	0	0	0	0	0	.—*	.—*	18
8 cum.	8 cum.	7 cu. str.	9 cu. str.	10 cu. str.	3 cu. str.	.01	0.2	19
0	2 cum.	3 ci. str.	2 ci. str.	0	0	----	----	20
0	0	0	0	1 ci. str.	2 ci. str., 1 str.	.02	0.5	21
2 cum.	2 cum.	1 cum.	0	0	2 ci. str.	----	----	22
0	0	0	0	1 str.	1 ci. str.	----	----	23
0	0	0	0	0	0	----	----	24
0	0	0	0	0	0	----	----	25
0	0	0	0	0	0	----	----	26
10 str.	10 str.	10 str.	10 str.	10 str.	3 str.	----	----	27
9 cir.	7 cir.	7 cir.	4 cum.	0	0	----	----	28
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	2 str.	.03	0.8	29
0	0	0	0	0	0	----	----	30
3.4	3.5	3.2	2.9	3.1	3.2	----	----	
----	----	----	----	----	----	0.14	3.5	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
0	0	0	0	0	0	0.0	1
0	0	0	0	0	0	0.1	2
0	1 cum.	2 cum.	4 cum.	5 cum.	7 cum.	0.8	3
7 cum.	6 cum.	10 cum.	10 str.	10 str.	10 str.	7.8	4
7 cir.	3 str.	3 str.	2 str.	2 str.	2 str.	7.0	5
1 cum.	2 cum.	2 cum.	2 cum.	2 cum.	3 cum.	1.4	6
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	8.0	7
0	0	0	0	0	0	4.7	8
0	0	0	0	0	0	1.0	9
0	0	0	0	0	0	0.0	10
0	0	0	0	2 cum.	4 cum.	0.5	11
7 ci. str.	8 ci. str.	8 ci. str.	8 ci. str.	8 ci. str.	8 ci. str.	7.2	12
4 cir.	3 cir.	7 cir.	6 cir.	6 cir.	8 cir.	4.6	13
5 cir., 3 cum.	5 cum.	3 cum.	4 cum.	4 cum.	2 cum.	4.3	14
0	0	0	0	0	0	1.9	15
9 cum.	10 cum.	8 cum.	4 cum.	4 cum.	4 cum.	1.8	16
0	0	0	0	1 str.	1 str.	1.0	17
8 cum.	9 cum.	3 cum., 7 str.	10 nim.	10 nim.	10 nim.	3.0	18
0	0	0	1 cum.	1 cum.	3 cum.	4.6	19
1 cum.	0	0	0	0	0	1.4	20
10 nim.	10 nim.	10 nim.	10 nim.	10 str.	3 cum., 2 str.	4.2	21
10 cir.	10 cir.	10 cir.	10 cir.	8 cir.	5 cir.	5.6	22
5 cir.	3 cir.	4 cir.	7 cir.	5 cir.	3 cir.	2.3	23
0	0	0	0	0	0	0.0	24
0	0	0	0	0	0	0.2	25
10 cum.	10 str.	9 str.	8 str.	4 ci. cu., 3 str.	6 cir.	4.3	26
2 cir.	1 cir.	2 str.	7 str.	10 cu. str.	10 cu. str.	6.8	27
6 cu. str.	1 cum.	0	0	0	2 str.	4.0	28
0	1 cir.	1 cir.	1 cir.	0	0	4.7	29
2 cir.	3 ci. cu.	4 ci. cu.	3 ci. cu.	1 cum.	0	1.3	30
3.6	3.2	3.4	3.6	3.5	3.4	31.5	

* Inappreciable.

MAY, 1883.

TABLE CLV.—*Amount, kind, and direction of clouds and amount of precipitation, May, 1883.*

Washington mean time. Reduce to local mean time by adding 49^{m}

$\phi = +81^{\circ} 44'$ $\lambda = -64^{\circ} 45' = -4^{h} 19^{m}$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	0	0	0	0	0	4 cir.
2	8 cum.	10 cu. str.	4 cir., 6 str.	5 cir., 5 str	5 cir., 5 str.	10 nim.
3	0	1 ci. str.	0	0	0	0
4	6 ci. str.	4 ci. str.	2 ci. str.	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	2 cum.	2 cum.	3 cum.	3 cum.	2 cum.	1 cum.
11	7 cir.	8 cum.	8 cum.	5 cum.	5 cum.	3 cum.
12	2 cum.	7 cum.	8 cum.	8 cum.	7 cum.	7 cum.
13	8 str.	10 str.	10 str.	10 str.	10 str.	10 str.
14	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
15	9 ci. cu.	3 cir., 5 cu. str.	9 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.
16	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
17	0	0	0	0	0	0
18	1 ci. cu.	0	0	0	0	0
19	4 cum.	5 cum.	5 cum.	8 cu. str.	8 cu. str.	3 ci. cu.
20	7 str.	10 str.	10 str.	8 str.	3 ci. cu.	2 str.
21	5 cu. str.	8 cu. str.	10 cu. str.	10 str.	10 str.	10 str.
22	8 cu. str.	10 cu. str.	10 str.	10 str.	10 str.	5 str.
23	Fog.	Fog.	2 ci. cu.	2 ci. cu.	4 ci. cu.	4 ci. cu.
24	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
25	10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.
26	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
27	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
28	10 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.
29	7 cum.	7 cum.	4 cum.	1 cir.	2 cir.	3 cir.
30	10 nim.	10 nim.	10 nim.	10 str.	10 str.	8 cum.
31	6 cum.	8 cum.	8 cum.	6 cum.	10 cum.	10 cum.
Means	5.5	6.0	5.8	5.5	5.5	5.2
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	5 ci. cu.	9 cum.	7 ci. cu.	6 cum.	7 cum.	5 ci. cu.
2	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
3	4 cir.	6 cir.	5 cir.	7 cir.	7 cir.	7 cir.
4	1 cir.	1 cir.	1 cir.	2 cir.	2 cir.	0
5	1 cum.	0	0	0	0	0
6	0	0	1 str.	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	3 ci. str.	2 ci. str.	2 ci. str.	0	0	0
10	7 ci. str.	6 ci. str.	6 cir.	4 cir.	1 cir.	4 cir.
11	2 cir.	1 cir.	3 cir.	4 cir.	2 cir.	1 cir.
12	1 cir.	1 cir.	0	0	0	0
13	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
14	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
15	8 cum.	9 cum.	9 cum.	8 cum.	10 str.	10 str.
16	10 nim.	10 nim.	10 nim.	10 nim.	9 cum.	9 cum.
17	8 cir.	8 cir.	7 cir.	6 cir.	5 ci. cu., 2 str.	6 ci. cu., 2 str.
18	0	0	0	0	0	0
19	3 ci. cu.	9 cum.	8 cum.	4 ci. cu.	5 ci. cu.	8 cum.
20	2 cir.	2 cir.	3 cir.	3 cir.	2 cir.	1 cir.
21	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
22	0	0	0	0	1 ci. str.	1 ci. str.
23	8 ci. str.	9 ci. str.	10 ci. str.	10 ci. str.	10 ci. str.	9 ci. str.
24	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
25	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
26	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
27	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
28	10 nim.	5 cu. str.	6 cu. str.	9 cum.	8 cum.	8 cum.
29	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
30	2 cum.	2 cum.	1 cum.	2 cum.	2 cum.	1 cum.
31	6 cum.	4 cum.	4 cum.	5 cum.	5 cum.	5 ci. cu.
Means	5.5	5.6	5.6	5.5	5.4	5.4

MAY, 1883.

TABLE CLV.—*Amount, kind, and direction of clouds and amount of precipitation, May, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation.		Date.
8 cum.	6 cum.	7 cum.	6 cum.	7 cum.	8 cum.	------	------	1
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.06	1.5	2
0	0	0	2 cir.	2 cir.	2 cir.	------	------	3
0	0	0	2 cir.	0	0	------	------	4
0	1 cum.	1 cum.	3 cum.	5 cum.	4 cum.	------	------	5
0	0	0	1 str.	1 str.	1 str.	------	------	6
0	0	0	0	0	0	------	------	7
0	0	0	0	0	0	------	------	8
0	0	0	0	0	3 str.	------	------	9
0	0	0	0	0	5 cir.	------	------	10
0	0	0	0	0	0	------	------	11
5 cum.	3 cum.	3 cir.	2 cum.	2 cum.	1 cir.	------	------	12
10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.14	3.6	13
10 nim.	10 nim.	10 nim.	10 nim.	10 str.	10 str.	.01	0.2	14
10 cu. str.	10 cu. str.	10 str.	6 cum., 4 str.	9 cum.	8 cum.	.02	0.5	15
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.05	1.3	16
0	1 cir.	3 cir.	5 cir.	3 cir.	7 cir.	------	------	17
0	0	0	0	0	0	------	------	18
2 ci. cu.	2 ci. str.	4 ci. cu.	6 ci. cu.	2 ci. cu.	4 ci. cu.	------	------	19
1 str.	1 str.	2 cum.	2 cir.	2 cir.	2 cir.	------	------	20
10 str.	8 cu. str.	10 cum.	10 cum.	9 cum.	10 cum.	.—*	.—*	21
2 cu. str.	0	0	0	0	0	------	------	22
5 ci. str.	5 ci. str.	4 ci. str.	6 ci. str.	7 ci. str.	8 ci. str.	.01	0.2	23
10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.	.—*	.—*	24
10 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.	.03	0.8	25
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.07	1.8	26
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.05	1.3	27
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.04	1.0	28
10 cir.	10 str.	10 str.	10 str.	10 str.	10 str.	.09	2.3	29
5 cum.	5 cum.	4 cum.	4 cum.	3 cum.	2 cum.	.01	0.2	30
10 cum.	5 cum.	4 cum.	8 cum.	3 cum.	2 cu. str.	------	------	31
5.1	4.7	4.6	5.4	5.0	5.6	------	------	
------	------	------	------	------	------	0.58	14.7	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
7 ci. cu.	10 cum.	10 cum.	10 cum.	5 cir., 2 cum.	8 cum.	5.7	1
10 nim.	10 nim.	10 nim.	10 nim.	8 str.	7 str.	9.7	2
7 cir.	7 cir.	7 cir.	7 cir.	7 cir.	7 cir.	3.5	3
0	0	0	0	0	0	0.9	4
0	0	0	0	0	0	0.7	5
0	0	0	0	0	0	0.2	6
0	0	0	0	0	0	0.0	7
0	0	0	0	0	0	0.0	8
0	0	0	0	5 cum.	3 cum.	0.8	9
7 ci. cu.	7 ci. cu.	4 cum.	6 cum.	4 cum.	4 cum.	3.0	10
0	0	1 cir.	0	0	0	2.1	11
0	0	0	4 cum.	9 cum.	9 cu. str.	3.3	12
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	13
10 str.	10 str.	10 str.	10 str.	8 ci. str.	9 ci. str.	9.9	14
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	9.4	15
8 cum.	7 cum.	1 cum.	0	0	0	8.1	16
6 ci. cu.	5 ci. cu.	4 ci. cu.	4 ci. cu.	3 ci. cu.	3 ci. cu.	3.7	17
0	0	0	0	4 ci. cu.	5 ci. cu.	0.4	18
2 cir., 6 cum.	9 cum.	9 cum.	10 cum.	10 str.	10 str.	6.1	19
0	1 cum.	6 cum.	7 cir.	10 cum.	10 cum.	4.0	20
10 nim.	10 cum.	10 cum.	10 str.	10 str.	10 cum.	9.6	21
1 cir.	3 cir.	4 cir.	2 cir.	3 cir.	4 cir.	3.0	22
4 ci. str., 4 cum.	10 cum.	10 str.	10 nim.	10 nim.	10 nim.	7.5	23
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	24
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	25
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	26
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	27
10 cum.	8 cum.	2 cum.	7 cum.	2 cum.	0	8.1	28
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	8.5	29
1 cum.	5 cum.	2 cum.	1 cum.	1 cum.	4 cum.	4.4	30
6 cum.	4 cum.	4 cum.	3 cum.	4 cum.	4 cum.	5.9	31
5.4	5.7	5.3	5.5	5.6	5.7	5.4	

* Inappreciable.

JUNE, 1883.

TABLE CLVI.—*Amount, kind, and direction of clouds and amount of precipitation, June, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	2 cum.	2 cum.	1 cum.	4 cum.	3 cum.	5 cum.
2	5 cir.	8 cir.	10 cir.	10 str.	10 str.	10 str.
3	0	0	0	0	0	0
4	2 cir.	4 ci. cu.	10 str.	10 str.	10 str.	10 str.
5	6 cum.	10 cum.	10 str.	10 str.	10 str.	10 str.
6	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
7	6 cum.	10 cum.	9 cum.	10 cum.	10 str.	10 str.
8	9 cum.	8 cum.	8 cum.	3 cum.	2 cum.	1 cum.
9	0	0	0	0	0	0
10	9 cum.	10 str.	10 str.	10 str.	10 str.	10 str.
11	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
12	10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.
13	9 str.	9 cum.	9 cum.	7 cum.	5 cum.	3 cum.
14	2 cum.	2 cum.	1 cum.	1 cum.	3 cum.	3 cum.
15	0	0	0	0	0	1 cum.
16	3 cum.	4 cum.	Fog.	1 cir.	3 cir.	4 cir.
17	10 str.	10 str.	10 str.	10 str.	10 str.	10 cum.
18	10 str.	10 str.	10 str.	10 cum.	9 cum.	9 cum.
19	0	0	0	1 cum.	2 cum.	8 cum.
20	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
21	10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	9 cum.	9 cum.
22	0	0	0	0	0	0
23	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
24	10 str.	10 str.	9 str.	9 str.	8 cu. str.	8 cu. str.
25	10 cu. str.	8 cu. str.	7 cum.	7 cum.	5 cum.	7 cum.
26	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
27	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
28	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
29	10 nim.	10 nim.	10 nim.	9 str.	9 cu. str.	9 cu. str.
30	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
Means	7.1	7.4	7.7	7.2	7.1	7.4
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	6 cum.	7 cum.	5 cum.	2 cum.	2 cum.	0
2	10 cum.	8 cum.	6 cum.	4 cum.	6 cum.	8 str.
3	1 cir.	1 cir.	4 cir.	1 cir.	1 cir.	0
4	0	0	0	0	0	0
5	10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
6	5 cum.	3 cum.	7 cu. str.	8 cu. str.	7 cum.	8 cum.
7	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
8	2 ci. str.	1 ci. str.	1 ci. str.	1 ci. str.	1 ci. str.	2 ci. str.
9	0	0	0	0	0	0
10	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
11	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
12	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
13	10 str.	10 str.	10 str.	10 str.	7 str.	5 str.
14	0	0	0	0	0	1 cir.
15	10 cu. str.	10 cu. str.	6 cir.	4 ci. str.	4 cir.	2 cir.
16	10 cir.	10 str.	10 ci. str.	3 ci. str., 7 str.	2 ci. str., 8 str.	10 str.
17	10 str.	10 str.	10 str.	10 str.	10 cum.	10 cum.
18	4 cum., 2 str.	1 cir., 4 cum.	5 cir., 2 str.	4 ci. str., 3 str.	5 ci. str.	5 ci. str
19	10 cu. str.	10 cu. str.	10 cu. str.	9 cu. str.	7 cu. str.	6 cu. str.
20	10 cu. str.	10 cu. str.	9 cu. str.	1 cum., 9 str.	10 str.	10 str.
21	10 cu. str.	9 cu. str.	6 cum.	3 ci. cu.	1 ci. cu.	2 ci. cu.
22	2 cir.	3 cir.	8 cir.	10 ci. str.	10 str.	10 str.
23	10 str.	10 str.	10 str.	10 str.	10 cu. str.	10 str.
24	4 cum.	5 cum.	5 cum.	8 cum.	9 cu. str.	9 cu. str.
25	9 cu. str.	8 cu. str.	3 cu. str.	1 cum.	1 cum.	1 cir.
26	10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.
27	9 cu. str.	9 cu. str.	9 cu. str.	10 cu. str.	10 cu. str.	10 str.
28	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
29	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
30	7 cu. str.	7 cu. str.	8 cu. str.	7 cu. str.	9 cu. str.	9 cu. str.
Means	7.4	7.2	7.1	6.8	6.7	6.6

JUNE, 1883.

TABLE CLVI.—*Amount, kind, and direction of clouds and amount of precipitation, June, 1883.*

Washington mean time. To reduce to local mean time add 49^m

$\varphi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. Inches.	Precipitation. mm.	Date.
5 cum.	4 cum.	3 cum.	4 cum.	5 cum.	6 cum.	......	......	1
5 cir.	9 ci. str.	8 str.	10 cum.	10 cum.	10 cum.	......	......	2
0	0	0	0	0	1 cir.	......	......	3
10 str.	8 str.	6 cum.	2 cum.	5 cum.	0	......	......	4
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.01	0.2	5
10 nim.	10 str.	10 str.	10 str.	10 str.	10 str.	.—*	.—*	6
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	......	......	7
1 cum.	0	0	0	0	1 ci. str.	......	......	8
0	0	0	0	3 ci. str.	0	......	......	9
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.—*	.—*	10
3 ci. cu., 4 str.	5 cum., 2 str.	9 str.	10 str.	10 str.	10 str.	.—*	.—*	11
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	.—*	.—*	12
2 cir., 3 cum.	2 cir., 7 cum.	2 cir., 5 cu. str.	9 cu. str.	10 str.	10 str.	......	......	13
1 cum.	1 cum.	0	0	0	0	......	......	14
1 cum.	2 cum.	4 ci. cu.	8 ci. cu.	10 cu. str.	10 cu. str.	......	......	15
4 cir.	7 ci. str.	9 ci. str.	10 ci. str.	10 cir.	10 cir.	......	......	16
10 cum.	10 cum.	10 cum.	10 cum.	4 cir., 6 str.	10 str.	......	......	17
10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	9 cu. str.	3 cum., 3 str.	......	......	18
10 cu. str.	10 cu. str.	9 cu. str.	9 cu. str.	10 cu. str.	10 cu. str.	.—*	.—*	19
10 str.	10 str.	10 str.	10 str.	10 str.	8 cu. str.	.—*	.—*	20
10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	10 str.	10 str.	......	......	21
0	1 cir.	1 cir.	1 cir.	1 cir.	4 cir.	.—*	.—*	22
10 nim.	10 nim.	10 nim.	10 nim.	10 str.	10 str.	.04	1.0	23
7 cum.	7 cum.	3 cum.	2 cum.	2 cum.	3 cum.	......	......	24
7 cu. str.	7 cu. str.	7 cu. str.	5 cum.	6 cum.	8 cu. str.	......	......	25
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	.05	1.3	26
10 nim.	10 nim.	10 cu. str.	10 cu. str.	10 cu. str.	9 cu. str.	.—*	.—*	27
10 nim.	10 str.	10 str.	10 str.	10 str.	10 str.	.01	0.2	28
9 cu. str.	9 cu. str.	9 cu. str.	9 cu. str.	9 cu. str.	10 cu. str.	.—*	.—*	29
10 str.	10 str.	10 str.	10 str.	10 str.	10 nim.	.—*	.—*	30
7.3	7.6	7.4	7.4	7.8	7.5	......	......	
....	....	....	....	....	....	0.11	2.7	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
1 cir.	4 cir.	9 cir.	2 cir.	4 cir.	9 cir.	4.0	1
9 str.	10 str.	10 str.	10 str.	10 cu. str.	10 cum.	8.6	2
0	0	0	0	0	0	3.1	3
0	1 cum.	8 cum.	9 cum.	7 cum.	6 cum.	4.5	4
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	9.8	5
1 cir., 6 cum.	9 cum.	10 cum.	9 cum.	9 cum.	9 cum.	8.8	6
10 str.	10 cu. str.	9 cu. str.	9 cu. str.	9 cum.	8 cum.	9.6	7
1 cir., 1 cum.	1 cum.	0	0	0	0	1.8	8
0	0	0	1 cum.	3 cum.	5 cum.	0.5	9
10 str.	10 nim.	10 str.	10 str.	10 str.	10 str.	10.0	10
10 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.	9.8	11
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	10.0	12
2 str.	3 ci. str.	2 ci. str.	1 ci. str.	0	0	6.3	13
1 cir.	0	0	1 cum.	0	0	0.7	14
2 cir.	3 cir.	5 cir.	5 cir.	2 cum.	0	3.8	15
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	8.1	16
10 cir.	8 ci. str.	10 cu. str.	10 cu. str.	10 cu. str.	10 str.	9.2	17
7 ci. str.	5 ci. str.	4 ci. str.	4 ci. str.	3 ci. str.	1 ci. str.	7.2	18
2 cir., 8 cu. str.	8 cu. str.	10 nim.	10 nim.	10 nim.	10 nim.	7.4	19
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	9.8	20
2 ci. cu.	1 ci. cu.	0	0	0	0	6.3	21
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	4.6	22
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	10.0	23
9 cum.	10 cu. str.	9 cum.	9 cum.	10 cu. str.	10 str.	7.3	24
2 cir.	5 cir.	7 str.	10 str.	10 str.	10 str.	6.3	25
10 str.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	26
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	9.8	27
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	28
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	9.7	29
9 cu. str.	7 cum.	6 cum.	4 cir.	3 cir.	2 cir.	8.2	30
6.7	6.8	7.3	7.1	7.0	7.0	7.2	

* Inappreciable.

JULY, 1883.

TABLE CLVII.—*Amount, kind, and direction of clouds and amount of precipitation, July, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.
1	10 str.	Fog.	Fog.	10 str.	10 str.	Fog.
2	9 cum.	9 cum.	5 cum.	7 cir.	6 cir.	4 cir.
3	2 cum.	2 cum.	2 cum.	2 cum.	1 cum.	0
4	8 cum.	10 str.	Fog.	Fog.	Fog.	10 str.
5	Fog.	Fog.	Fog.	Fog.	5 cum.	Fog.
6	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
7	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
8	0	0	0	0	0	0
9	10 cum.	10 cum.	10 cum.	10 cum.	10 cum.	7 cum.
10	0	0	0	0	0	0
11	0	0	0	0	1 cir.	1 cir.
12	0	0	0	0	0	1 cir.
13	8 cum.	8 cum.	8 cum.	8 cum.	8 cum.	7 cum.
14	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
15	10 str.	10 str.	10 str.	10 str.	8 cum.	1 cum.
16	5 cum.	4 cum.	3 cum.	8 cum.	5 cum.	9 cum.
17	8 cum.	4 cir., 4 cum.	5 cum.	2 cir., 3 cum.	3 cir., 3 cum.	2 cir., 1 cum.
18	8 cir.	7 cir.	7 cir.	6 cir.	3 cir.	1 cir.
19	1 cum.	1 cum.	1 cum.	1 cum.	1 cum.	1 cum.
20	0	0	0	0	0	0
21	1 cum.	1 cum.	2 cum.	1 cum.	0	1 cum.
22	10 str.	10 str.	10 str.	9 cum.	9 cum.	8 cum.
23	10 str.	10 str.	10 str.	10 str.	10 nim.	10 nim.
24	10 str.	10 str.	10 str.	10 str.	10 str.	10 str.
25	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
26	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
27	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
28	9 str.	7 cum.	3 cum.	1 cum.	1 cum.	1 cum.
29	0	0	0	0	0	0
30	10 str.	10 cu. str.	10 cu. str.	7 cu. str.	3 cir., 4 cu. str.	10 cu. str.
31	2 cum.	2 cum.	2 cum.	3 cum.	3 cum.	5 cir., 1 cum.
Means	6.5	6.4	6.1	6.1	5.6	5.5
Total						

Date.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.
1	2 cir., 2 cu. str.	7 ci. str.	7 ci. str.	7 ci. str.	5 ci. str.	6 ci. str.
2	0	0	0	0	0	0
3	2 ci. str.	2 ci. str.	2 ci. str.	0	0	1 str.
4	9 cu. str.	9 cu. str.	7 cu. str.	7 cum.	7 cum.	6 cum.
5	5 ci. cu., 3 str.	3 ci. cu.	0	1 str.	0	0
6	10 str.	10 nim.	10 nim.	10 nim.	10 nim.	10 str.
7	10 str.	10 str.	7 cu. str.	3 cum.	5 cir., 1 cum.	2 cir.
8	1 cum.	1 ci. cu.	3 ci. cu.	2 ci. str.	3 cir.	2 cir.
9	0	0	0	0	1 cir.	0
10	Fog.	0	0	Fog.	0	0
11	2 cir.	1 cir.	1 cir.	0	0	0
12	5 ci. str.	4 cum.	2 cum.	1 cum.	4 cum.	4 cum.
13	10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	10 str.
14	10 str.	10 str.	10 str.	10 cu. str.	9 cu. str.	10 str.
15	3 ci. cu.	3 ci. cu.	5 ci. cu.	7 ci. cu.	8 cum.	9 cum.
16	7 cir.	8 cir.	8 cir.	8 cir.	9 cu. str.	7 str.
17	7 cir.	7 cir.	7 cir.	8 cir.	8 str.	8 ci. str.
18	5 cum.	5 cum.	5 cir.	6 cu. str.	5 cu. str.	3 cum.
19	2 cum.	2 cir.	0	0	0	0
20	1 cir.	1 cir.	1 cum.	1 cum.	0	0
21	8 cum.	8 cum.	10 cum.	9 cum.	9 cum.	9 cum.
22	9 cum.	8 cum.	8 cum.	8 cum.	8 cu. str.	8 cum.
23	10 nim.	10 nim.	10 nim.	10 nim.	10 str.	10 str.
24	10 cum.	10 str.	10 nim.	10 nim.	10 nim.	10 nim.
25	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.
26	10 nim.	10 nim.	10 str.	10 str.	10 str.	10 str.
27	10 str.	10 str.	10 str.	10 str.	10 str.	10 cu. str.
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	9 cum.	8 cum.	5 cum.	3 cum.	3 cum.	6 cum.
31	10 ci. str.	8 ci. str.	8 cum.	8 cu. str.	9 cu. str.	5 cum.
Means	6.2	5.6	5.4	5.5	5.3	5.0

JULY, 1883.

TABLE CLVII.—*Amount, kind, and direction of clouds and amount of precipitation, July, 1883.*

Washington mean time. Reduce to local mean time by adding 49^m

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	Precipitation. *Inches.*	Precipitation. *mm.*	Date.
5 cir.; fog over bay.	Fog over bay.	Fog over bay.	2 cir.	2 cir., 1 str.	2 cu. str.	------	------	1
3 cum.	8 cum.	5 cum.	2 cum.	1 ci. str.	1 ci. cu.	------	------	2
0	0	0	0	0	0	------	------	3
8 cum.	8 cum.	9 cum.	10 cum.	10 cu. str.	10 cu. str.	------	------	4
Fog.	5 cum.	Fog.	4 ci. cu.	3 ci. cu.	4 ci. cu.	------	------	5
3 cum.	5 cum.	5 cu. str.	8 cu. str.	10 cu. str.	10 cu. str.	.—*	.—*	6
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	------	------	7
0	1 cum.	1 cum.	0	0	1 cum.	------	------	8
4 cum.	0	0	0	0	0	------	------	9
0	0	Fog.	Fog.	Fog.	Fog.	------	------	10
3 cir.	3 cir.	2 ci. str.	0	0	0	------	------	11
3 cir.	4 cir.	3 ci. str.	5 ci. str.	4 ci. str.	5 ci. str.	------	------	12
7 cum.	5 cum.	5 cum.	5 cum.	8 cum.	10 cum.	------	------	13
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	------	------	14
2 cum.	5 cum.	2 cum.	7 cum.	6 cum.	4 ci. cu.	------	------	15
9 cum.	7 cum.	5 ci. str.	4 ci. str.	2 cir.	3 cir.	------	------	16
8 cir.	10 cir.	8 cir.	7 cir.	6 cir.	7 cir.	------	------	17
2 cir.	1 cir.	0	0	1 cum.	2 cum.	------	------	18
1 cum.	1 cum.	1 cum.	1 cum.	1 cum.	2 cum.	------	------	19
0	0	0	1 cum.	1 cum.	1 cum.	------	------	20
1 cum.	1 cir., 1 cum.	2 cum.	2 cir., 4 cum.	7 cum.	8 cum.	------	------	21
6 cum.	4 cum.	4 cum.	7 cum.	10 cum.	8 cum.	------	------	22
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.04	1.0	23
10 str.	10 str.	10 str.	10 str.	1 cir., 9 cum.	10 cum.	.01	0.2	24
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	.19	4.8	25
10 nim.	10 str.	10 str.	10 str.	10 str.	10 nim.	.07	1.8	26
10 nim.	10 nim.	10 nim.	10 str.	10 str.	10 str.	.01	0.2	27
0	0	0	0	0	0	------	------	28
0	0	0	0	0	0	------	------	29
10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	8 cum.	8 cum.	------	------	30
6 cum.	3 cir., 3 cum.	5 cir.	7 cir.	8 ci. str.	10 ci. str.	------	------	31
5.2	5.2	5.1	5.4	5.5	5.7	------	------	
------	------	------	------	------	------	0.32	8.0	

7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Date.
8 ci. str.	9 ci. str.	5 ci. cu., 5 str.	5 ci. cu., 5 str.	7 ci. cu.	8 cu. str.	6.9	1
0	0	0	0	1 str.	2 str.	2.6	2
1 str.	1 str.	1 str.	1 str.	2 str.	3 ci. cu., 1 str.	1.1	3
7 cu. str.	3 cir., 4 cum.	2 cir.	2 cir., 3 str.	Fog.	Fog.	8.3	4
0	0	0	10 cu. str.	10 str.	10 str.	5.5	5
10 str.	10 str.	10 str.	10 str.	9 str.	7 str.	9.0	6
1 cir.	1 cum.	0	0	1 cum.	1 cum.	6.8	7
1 cir.	1 cir., 3 str.	6 ci. cu.	8 cum.	9 cum.	9 cum.	2.2	8
0	0	0	0	0	0	2.6	9
0	0	0	0	Fog.	Fog.	3.3	10
0	1 cir.	2 cir.	3 ci. str.	3 ci. str.	1 cir.	1.0	11
3 cir.	3 cir., 2 cum.	4 cum.	6 cum.	9 cum.	8 cu. str.	3.3	12
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	8.1	13
10 str.	10 str.	10 str.	10 str.	9 str.	10 str.	9.9	14
8 cum.	9 cum.	8 cum.	4 cum.	5 cum.	6 cum.	6.2	15
6 str.	4 str.	3 ci. cu.	5 cu. str.	5 cum.	5 cum.	5.7	16
8 ci. str.	8 ci., str.	7 ci. str.	7 ci. str.	7 ci. str.	7 ci. str.	7.1	17
2 cum.	2 cum.	2 cum.	1 cum.	1 cum.	1 cum.	3.2	18
0	0	0	0	0	1 ci. str.	0.8	19
1 ci. cu.	1 ci. cu.	1 ci. cu.	0	1 cum.	1 cum.	0.5	20
9 cum.	8 cu. str.	9 cu. str.	9 cu. str.	9 cu. str.	9 cu. str.	5.8	21
2 cir., 5 cum.	2 cir., 6 cum.	8 cum.	8 cum.	9 cum.	9 cu. str.	8.0	22
10 str.	10 str.	10 str.	10 str.	10 str.	10 str.	10.0	23
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	24
10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10 nim.	10.0	25
10 ci. str.	5 ci. str.	3 ci. str.	6 cu. str.	10 cu. str.	10 str.	9.3	26
9 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	10 cu. str.	10.0	27
0	0	0	0	0	0	0.9	28
4 cu. str.	5 str.	8 cu. str.	2 cir., 6 str.	9 str.	9 cu. str.	1.8	29
8 cum.	3 cir., 2 cum.	2 cum.	3 cum.	1 cum.	1 cum.	6.8	30
6 cum.	6 cum.	8 cum.	10 cum.	10 str.	10 nim.	6.6	31
5.1	5.1	5.0	5.6	6.4	6.4	5.6	

* Inappreciable.

TABLE CLVIII.—*Evaporation from a seven-inch cube of ice, slightly saline, which had five sides (two hundred and forty-five square inches) freely exposed.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	September, 1881.	October, 1881.	November, 1881.	December, 1881.	January, 1882.	February, 1882.	April, 1882.	May, 1882.
	Lbs. Ozs.	*Lbs. Ozs.*	*Lbs. Ozs.*	*Lbs. Ozs.*	*Lbs. Ozs.*	*Lbs. Ozs.*	*Lbs. Ozs.*	*Lbs. Ozs.*
1		*10 14	10 12.5				10 8.5	5 14
2			10 12.5					
3		10 12.5	10 12					
4		10 13.5			10 12.5			
5		10 13						
6	12 1.5	10 13				10 13.5		†62 0
7		10 13.5						
8	11 14	10 11.5						
9	11 10							
10	11 3	10 11.5		10 13	10 13	10 13		
11	11 1	10 12						‡49 0
12	0 9.5	10 12.5					9 10.5	
13	0 8.5							
14	10 8.5	10 12.5					9 10	
15	10 6	10 11.5			10 13.5	10 13		
16		10 12.5						
17	10 3		10 13				8 11.5	
18	10 1	10 13	10 13					
19	10 0	10 12.5	10 12.5					
20	10 0	10 13	10 12.5		10 13.5	10 13		
21	10 0	10 12.5	10 13					
22	10 0	10 12.5	10 12.5				8 2.5	
23	9 14	10 13	10 12.5					
24	9 14	10 13	10 12.5					
25		10 12	10 12.5		10 12.5	10 13		
26		10 12	10 13					
27	9 9.5	10 12	10 13				6 12	
28	9 10.5	10 12	10 13					
29		10 12.5	10 13					
30	9 9.5	10 12	10 13	10 13	10 12.5			
31		10 13						

* New cube exposed. † New cube of *one foot* face. Old cube melted. ‡ Some portion lost by melting.

NOTE.—The weight, in pounds and ounces, avoirdupois, was determined at noon, daily.

SEPTEMBER.	MARCH.	APRIL.
24 days = 2 pounds, 8 ounces = 17,500 grains Troy. 24 days = 71.02 grains to the square inch. *Daily* = 2.96 grains to the square inch.	32 days = 4 ounces = 1,750 grains Troy. 32 days = 7.10 grains to the square inch. *Daily* = .22 grains to the square inch.	21 days = 38 ounces = 16,675 grains Troy. 21 days = 68.06 grains to the square inch. *Daily* = 3.24 grains to the square inch.

October to February inappreciable.

Evaporation (in excess of precipitation) from ninety-three and three-fourths (93.75) *square inches surface of fresh water.*

Date.	Ounces avoirdupois.	Date.	Ounces avoirdupois.	Date.	Ounces avoirdupois.
1882.		1882.		1882.	
July 2	Water exposed.	July 13	6	July 24	0
3	4.5	14	*22.5	25	4.5
4	5	15	*9	26	4
5	9	16	11.5	27	5
6	11	17	8	28	7
7	11.5	18	1	29	4
8	6.5	19	3.5	30	0
9	6	20	5.5	31	3.5
10	3.5	21	4		
11	3.5	22	2.5		102.0
12	0	23	3		

* Indicates increase in weight from rainfall.

The mean cloudiness for each year was substantially the same, being .50 the first and .49 the second year.

The cloudiness is not, however, equally distributed through the months, being only .34 during the absence of the sun, from October to February, inclusive, and nearly 20 per centum higher during its presence.

The mean cloudiness, by months, is given in the following table:

TABLE CLIX.—*Mean cloudiness at Fort Conger*, 1881–'83.

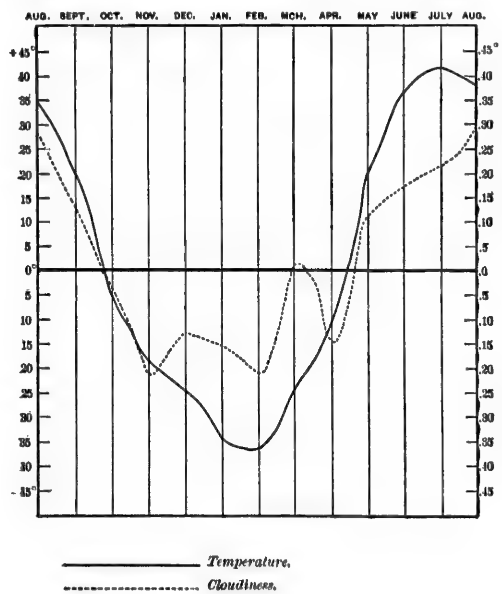
$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881–'82.	1882–'83.	1881–'83.	Month.	1882.	1883.	1881–'83.
August	.75	.82	.78	March	.52	.48	.50
September	.57	.69	.63	April	.38	.32	.35
October	.37	.52	.45	May	.65	.54	.60
November	.29	.26	.28	June	.61	.72	.66
December	.43	.29	.36	July	.85	.56	.70
January	.32	.36	.34				
February	.28	.28	.28	Year	.501	.488	.494

As might be expected the clearness of the sky is closely connected with the degree of cold, and the greatest cloudiness, .74, occurs during July and August—the warmest months. This relation is clearly shown by the following chart:

CHART No. 14.—*Comparative mean temperatures and mean cloudiness at Fort Conger*, 1881–'83.

[Departures in degrees Fahrenheit and per centum of cloudiness.]



The following table gives the number of clear (0 to .2 cloudiness), fair (.3 to .7), cloudy (.7 to 1.0) hours, and in which rain or snow fell. The hours of rain or snow, 1875–'76, is appended as being the only comparable record, owing to dissimilarity of terms.

TABLE CLX.—*Hours of various weather at Fort Conger*, 1881–'83.

$\phi = 81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881–'82.				1882–'83.				1881–'83.				1875–'76.
	Clear.	Fair.	Cloudy.	Rain or snow.	Clear.	Fair.	Cloudy.	Rain or snow.	Clear.	Fair.	Cloudy.	Rain or snow.	Rain or snow.
August	83	156	319	90	63	128	447	106	73	142	383	98	28
September	236	157	229	98	157	118	238	207	196	138	234	152	120
October	412	115	182	35	305	118	226	95	358	116	204	65	144
November	471	84	115	50	470	134	99	17	470	109	107	34	68
December	378	82	190	94	472	125	113	34	425	104	152	64	92
January	474	70	132	68	433	110	94	107	454	90	113	88	92
February	416	129	99	28	437	110	64	61	426	120	82	44	66
March	250	206	168	120	322	124	177	121	286	165	172	120	72
April	400	111	122	87	430	130	111	49	415	120	116	68	90
May	174	173	254	143	273	137	155	179	176	155	204	161	74
June	194	171	241	114	145	113	376	86	140	142	308	100	48
July	62	86	493	103	254	148	273	69	66	117	383	86	80
Year	3,550	1,540	2,544	1,030	3,761	1,495	2,373	1,131	3,656	1,518	2,458	1,080	974
Per centum	.41	.18	.29	.12	.43	.17	.27	.13	.42	.18	.28	.12	.11

Rain, which is united with the snow in the table, fell as follows: June, 1882, 26 hours; July, 79; August, 41; September, 8; June, 1883, 3, and July, 28 hours, aggregating 159 hours, or less than 1 per centum.

The close accord between the per centum of rain and snow for these three years gives considerable weight to its value, as indicating the normal conditions of weather at Fort Conger.

PRECIPITATION.

The marked paucity of observations on the rain and snow fall in the arctic regions has often been lamented by meteorologists, and in consequence unusual care was taken with reference to observations at Fort Conger.

The number of hours of rain or snow is no criterion by which to judge of the amount of precipitation in very high latitudes, as the snowfall, or even rain, of many hours' duration, is often so small in amount as to be immeasurable by the ordinary methods. This, added to the usual difficulties of accurately determining the amount of melted snow, made the task of accurate observations very great.

The ordinary Signal Service gauge was used, the top of which having a cross-section ten times greater in area than that of the receiving tube, enables measurements of 0.01 inch [0.254^{mm}] to be made with considerable accuracy.

The precipitation was measured every four hours, and the amount recorded for each day is for the 24 hours ending at 11 p. m., Washington mean time (11.49 p. m. local mean time).

To have measured the rainfall hourly would have been to impair the accuracy and value of the observations, owing to the very light character of the snow and rain fall in general. Even with four-hourly observations, it will be noted that of the 235 days on which precipitation occurred, the amount obtained was only a trace on 62 days, and 0.01 inch [0.254^{mm}] on 38 other days.

To counterbalance, as far as possible, the precipitation lost by measuring very small amounts, the observers, whenever a half-hundredth of an inch [0.127^{mm}] occurred in the measurements, recorded it as a whole hundredth.

The high winds occasionally interfered with the snowfall, but not to such an extent as might be supposed, for the greater part of the snow fell during calms or very light winds.

TABLE CLXI.—*Precipitation* (*rain and melted snow*) *at Fort Conger*, 1881–'83.

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

Month.	1881–'82.	1882–'83.	1881–'83, mean.		Month.	1882.	1883.	1882–'83, mean.	
	Inch.	Inch.	Inch.	Millimeters.		Inch.	Inch.	Inch.	Millimeters.
August*	.15	.61	.38	9.65	February	.11	.15	.13	3.30
September	.23	.47	.35	8.89	March	.28	.61	.44	11.18
October	.23	.24	.24	6.10	April	.20	.14	.17	4.32
November	.29	.11	.20	5.08	May	.23	.58	.40	10.16
December	.39	.21	.30	7.62	June	.26	.11	.18	4.57
January	.57	.27	.42	10.67	July	1.01	.32	.66	16.76

* From 12th; amount from 12th to 23d estimated as less than .01 inch [0.254^{mm}].

The precipitation aggregated 3.95 inches [100.33^{mm}] the first, and 3.82 inches [97.03^{mm}] the second year. The close accordance between the results for two consecutive years gives considerable weight to the mean for the two years, 3.88 inches [98.55^{mm}], and it is fair to assume that 4 inches [about 100^{mm}] is about the mean precipitation at Fort Conger. This opinion is to a certain extent verified by the fact that the hours of snow and rain, 1881–'83, agreed in per centum with those recorded at Fort Conger in 1875–'76, 12 against 11.

By seasons, the summer precipitation is the greatest, 1.22 inches [30.99^{mm}], against the least, 0.79 inch [20.07^{mm}], in autumn.

Contrary to expectation, the amount is quite irregularly distributed through the different months, but in sixteen out of twenty-four months the departures from normal rain-fall and temperature had corresponding signs.

The greatest monthly mean fall is in July, 0.66 inch [16.76^{mm}], while the least, from 0.13 inch [3.30^{mm}] to 0.18 inch [4.57^{mm}], prevails in February, April, and June. The greatest monthly fall, 1.01 inch [25.65^{mm}], was in July, 1882, and the least, 0.11 inch [2.79^{mm}], in February and November, 1882, and June, 1883.

Considerable precipitation occurred in the shape of frost, as it was designated, the air during clear, calm, and cold days having in suspension minute spiculæ of hoar-frost, which slowly settled and covered all objects with a thin coating.

To measure the hoar-frost, a tin plate, with an area of 3.96 square inches [2,554.83$^{sq\ mm}$], was exposed at noon of November 2, 1881, which was weighed at noon daily until May 13, 1882. The warmth of the sun and the changed conditions of the atmosphere were such, however, after April 1, 1882, so as to evaporate the frost or a part of the snow deposited. The weights include snow as well as hoar-frost.

From November 2, 1881, to March 31, 1882, inclusive, 182 grains were deposited on each square inch, which is equal to 0.72 inch [18.29^{mm}] of melted snow. To this must be added 0.25 inch [6.35^{mm}] of moisture registered by the regular gauge on occasions when no record was obtained from the plate. This correction gives 0.97 inch [24.64^{mm}] from the plate against 1.55 inches [39.37^{mm}] by the gauge for the same period, a result which is only satisfactory as indicating the probability that the measurements by gauge were not too small.

TABLE CLXII.—*Precipitation* (hoar-frost and snow) deposited on* 3.96 *square inches* [2,554.83$^{sq. mm}$] *of tin.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Day of month.	1881.		1882.				Day of month.	1881.		1882.			
	November.	December.	January.	February.	March.	April.		November.	December.	January.	February.	March.	April.
1	--------	1	(‡)	4	(‡)	(§)	18	3	0	(†)	(‡)	10	3
2	--------	2	(‡)	(‡)	(‡)	(‡)	19	6	0	3	1	3	45
3	10	7	21	(§)	½	(‡)	20	6	(‡)	1	0	18	10
4	4	3	1	(§)	12	(§)	21	7	4	3	2	(†)	--------
5	2	(†)	9	1	6	(‡)	22	3	40	1	0	1	--------
6	2	3	11	(‡)	13	(§)	23	1	47	2	(‡)	7	--------
7	2	1	(‡)	(‡)	2	--------	24	(‡)	18	(†)	(‡)	1	--------
8	(†)	1	3	(‡)	16	--------	25	3	17	6	17	1	16
9	13	2	2	0	16	--------	26	2	4	(§)	15	1	--------
10	0	4	1	5	3	--------	27	4	13	(§)	(‡)	0	--------
11	2	2	2	2	30	--------	28	1	1	2	(‡)	0	--------
12	4	3	14	0	30	--------	29	2	1	2	--------	(‡)	--------
13	5	9	6	0	12	--------	30	1	1	14	--------	0	--------
14	1	5	9	2	3	--------	31	--------	2	4	--------	0	--------
15	2	2	54	1	9	--------							
16	(‡)	2	(†)	0	4	--------	Total	87	195	178	50	211	74
17	1	1	(†)	0	13	--------							

* Weight in grains. † Deposit lost by wind or otherwise. ‡ No record. § Less than a grain.

NOTE.—Snow (melted) fell to the amount as follows on days when the record of precipitation on tin is wanting: November, 1881, 8th, .09 inch [2.29^{mm}]; 16th, .08 inch [2.03^{mm}]; 24th, none; December, 1881, 5th, trace; 20th, none; January, 1882, 2d, 7th, and 24th, none; 16th, 17th, and 18th, total .04 inch [1.02^{mm}]; February, 1882, 2d, 6th, 7th, 8th, 23d, 24th, 28th, none; 18th, .01 inch [0.254^{mm}]; 27th, .01 inch [0.254^{mm}]; March, 1882, 1st, .01 inch [0.254^{mm}]; 2d, trace; 3d, none; 21st, .01 inch [0.254^{mm}]; 29th, none.

EVAPORATION.

An attempt was made to determine the amount of evaporation, as well as of the precipitation, and observations were made for over nine months. On September 6, 1881, a seven-inch cube of ice was prepared, which was arranged so that five sides, having an aggregate area of 245 square inches (158,046 square millimeters), were fully exposed. The ice used for this purpose was cut from the harbor floe, as was a second cube, of the same dimensions, which was exposed October 1, 1881. At noon of each day the ice cube was weighed, to the nearest ounce, the precaution having first been taken to wipe from it, with the gloved hand, any snow which had fallen thereon.

As a month's observations, subsequent to October 1, showed that evaporation had substantially ceased, the observations were later made much less frequently.

It is evident from the observations that practically there is no evaporation during the four months and a half, from October 15 till February 28, while the sun is absent. This is not surprising in view of the fact that during such period the mean temperature of Fort Conger is −31.4° [−35.2° C.], at which temperature each cubic foot of air can hold but about one-tenth of a grain of water in suspension.

Reliable observations from the ice cubes, subsequent to April 17, were impracticable, since the effect of the sun on the side toward it caused, at times, considerable loss by melting and combining with the base on which the cube rested. The observations, though unsatisfactory, were continued until May 11.

On July 2, 1882, a flat dish, having an exposed surface of 93¾ square inches, filled with water, was placed suitable for radiation, so that the sun's rays continually reached the water. The dish received such rain or snow as fell, and consequently registered the amount of evaporation in excess of the precipitation.

The observations are given in detail in Table 158, but the following is a summary:

TABLE CLXIII.—*Evaporation from salt-water ice cubes and fresh water (in grains per square inch).*

	1881–'82.	Daily.	For month.
Ice	September, 1881 (24 days)	2.96	88.8
Ice	October, 1881, to include February, 1882	Trace	Trace
Ice	March, 1882	0.22	6.8
Ice	April, 1882 (21 days)	3.24	97.2
	May	*10.48*	*324.9*
	June	*17.72*	*531.6*
Water	July, 1882	24.96	773.8
	August	*13.96*	*432.8*
	Total		2,255.9

This gives an evaporation of 8.94 inches [227.08^{mm}] including interpolated values. In months during which observations were quite complete, we have a measured evaporation of 3.83 inches [97.28^{mm}], which, in itself, is 0.57 inch [14.48^{mm}] less than the measured rainfall from September 1, 1881, to August 31, 1882. This result, however, neglects the 0.99 inch [25.15^{mm}] rainfall in July, 1882, part of which doubtless extended out of the shallow pan, and also the interpolated values for May, June, and August. The value for June is probably not far from correct, but the very great disparity in the rate of evaporation from ice and from water surfaces, gives assurance that the values for May and August, months during which freezing temperature was frequent, are far too high.

Altogether these observations are valuable only as knowing how great is the evaporating power of the sun at a high latitude in favorable localities, and thus as explaining the freedom from ice and snow of large areas in Grinnell Land.

SOLAR AND TERRESTRIAL RADIATION.

SOLAR RADIATION.

The observations on solar radiation were made from maximum black-bulb thermometers *in vacuo*. The instruments used were made by J. Green, of New York. No error cards were sent with them, and it has been assumed that their readings are correct and comparable. Unfortunately the thermometers were not graduated below zero, Fahrenheit [$-17^{\circ}.8$ C.], and in consequence many readings were lost during March, immediately after the return of the sun.

The thermometers, two in number, were mounted 2 feet [0.6^{m}] above the ground, one (marked S. in record) with the bulb due south, and the other (marked N.) due north. In general the instrument pointing south read the higher, but not infrequently the reverse was true.

The detailed readings are given in the following table:

TABLE CLXIV.—*Solar and terrestrial thermometer readings at Fort Conger, 1881 to 1883.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	September, 1881.				October, 1881.				March, 1882.		April, 1882.		May, 1882.	
	Solar.		Terrestrial.		Solar.		Terrestrial.		Solar.		Solar.		Solar.	
	No. 1.	No. 6.	No. 3.	No. 5.	No. 1.	No. 6.	No. 3.	No. 5.	No. 1.	No. 6.	No. 2.	No. 6.	No. 2.	No. 6.
1					17	13	1.5	— 0.7			28	30.9	84.5	90
2					15	12	1	0			27	14.9	84.2	81.9
3					15.5	12.6	—14.5	—15.6		(*)	28.4	44	91.2	93.3
4					18.9	10	—21	—24		(*)	32.9	54.3	82	87
5					12.5	8	—22.5	—25.5		(*)	37	40.1	80.4	88.9
6					17	15	—20	—23		(*)	34.1	53.9	81.9	87
7					16	8	—16	—19		(*)	46	63	95.3	105.4
8	52.0	49	15.5	14	2	5	— 8	—10		(*)	17.9	19.1	96.7	100.3
9	72.6	67.5	6.5	5	12	4	—19.5	—22.5		(*)	55	70	84	99.1
10	48.5	34.5	10	— 1	11.5	4	—13.5	—16		11.8	56.2	58.1	84.8	90
11	59.5	64	6.5	5.5	10	0	—18.5	—21	(†)	(*)	62.3	74.9	65.9	65
12	36.5	35	11	9	11	1	—27	—30.5	(†)	(*)	57	60.8	80.5	82.4
13	32	35	12.5	14	10.5	0	—32.5	—25	(†)	(*)	57.9	66.3	65.6	67
14	61.2	63.8	5	3.7	11	0	—31	—34	(†)	(*)	62.3	64.5	108.2	111
15	51.7	52.1	8.2	6.1	11	4	—30.5	—33	(†)	(*)	58.4	59.8	91.5	97
16	55.7	68.6	3.2	2.2	11	0	—36.5	—40	(†)	(*)	69	75.2	59.7	59.5
17	24.2	21	7.5	6.0	Sun gone.				(†)	(*)	63.5	63	66.5	67.5
18	24.1	23.6	10.1	8.9					(†)	(*)	58.2	64	88.5	93.2
19	33.7	37	— 1	— 3					(†)	(*)	41.4	48	92.9	98.3
20	45	50.5	— 9.5	— 7.8					(†)	(*)	60	65.7	91.8	97
21									23.3	33.5	63.3	67	94.7	99.3
22	46	24	—13	—16					17	20.5	66.5	70.2	87	93
23	31	25	—11	—14					17.5	16	71.3	78.5	92	100
24	48	35	— 7	— 9					(§)	22	70.2	72.5	92	94.5
25	30	24	—11	—14					15.3	(*)	76.1	82.2	94.5	97
26	34	31	—12	—14					(‖)	26.1	66.2	74	89	93
27	26	14	— 7	—15					22.5	31.8	61.9	69.8	(?)	77
28	37.8	40.5	4	5.2					27	39.2	63.6	72	(?)	99
29	38	37	—23	—20					38.2	32.5	66	71.4	(?)	97
30	18.8	95	—18	—21					28	‡26	79.1	81.6	(¶)	57.0
31									37.8	54.3			89.6	96

Date.	June, 1882.		July, 1882.				August, 1882.				September, 1882.			
	Solar.		Solar.		Terrestrial.		Solar.		Terrestrial.		Solar.		Terrestrial.	
	No. 4.	No. 6.	No. 4.	No. 6.	No. 1.	No. 6.	No. 4.	No. 6.	No. 1.	No. 6.	No. 4.	No. 6.	No. 1.	No. 6.
1	94	100.5	102.5	102.0		29.0	82.8	89.2	26.0	28.4	63.0	67.0	16.0	15.2
2	81.6	89.9	55.0	55.6	34.8	35.0	50.4	50.8	28.4	30.5	37.1	37.5	14.5	14.2
3	85.3	89.4	68.9	68.9		34.6	67.7	69.0	29.5	28.7	41.8	41.8	19.0	19.7
4	88.5	89.4	88.4	89.5	33.0	33.0	87.6	93.2	29.5	31.1	69.0	73.5	19.0	20.0
5	81.9	84	89.3	91.6	33.8	34.1	82.1	89.4	30.6	33.8	49.0	50.0	15.0	14.6
6	78	79.5	99.3	100.0	36.0	37.0	47.3	47.5	29.0	31.5	34.0	37.0	16.8	18.0
7	88	88.7	100.0	104.6	38.0	38.4	68.0	72.0	27.0	29.8	34.4	35.2	14.5	14.0
8	86.2	87.8	102.5	101.7	35.1	35.6	75.1	80.0	27.1	29.2	33.0	35.1	9.2	9.1
9	88.8	90.2	93.0	92.5	31.8	32.0	84.0	88.0	28.6	26.5	63.0	75.0	6.0	6.5
10	99.5	100.3	99.0	103.2	30.2	31.0	52.0	53.0	29.0	26.0	62.1	71.0	6.2	6.0
11	90.6	88.8	67.8	63.2	29.6	30.1	93.0	97.0	31.0	28.0	61.9	65.4	7.5	7.1
12	57	57.2	86.5	88.1	28.0	29.0	83.8	84.7	32.0	29.5	68.0	70.5	7.0	5.5
13	92	94.2	84.5	89.0	32.0	33.4	81.0	85.5	31.0	27.0	68.0	70.8	12.0	12.2
14	94	94	50.7	51.0	31.7	32.5	‡75.8	‡76.4	‡30.9	‡33.9	53.0	60.1	4.0	5.0
15	61.3	62.1	93.9	97.4	34.5	34.9	66.0	68.0	33.0	30.5	50.5	56.0	4.8	
16	79.2	78.4	88.0	88.2	33.5	34.3	82.0	87.0	32.0	29.0	51.0	63.1	3.1	2.5
17	57.0	57.0	79.9	82.0	30.8	31.8	50.8	50.8	28.5	31.2	29.0	29.5	14.8	15.0
18	72.8	73.7	93.5	95.5	31.5	30.0	80.5	81.5	27.7	30.5	22.0	27.5	2.0	1.8
19	92.8	92.8	93.2	93.3	31.8	30.9	95.8	95.6	27.5	30.2	41.5	49.2	— 4.8	— 4.5
20	93.3	98.6	93.0	96.0	30.3	32.0	81.8	84.5	28.4	31.2	48.5	56.0	— 6.6	— 6.2
21	89.8	92.8	80.2	85.5	31.5	30.3	90.8	96.0	25.9	29.0	20.6	21.5	— 8.8	— 7.8
22	97.0	99.8	87.1	92.9	32.8	31.0	79.5	84.0	24.6	27.0	45.0	50.0	5.8	5.8
23	88.3	92.8	69.1	63.0	30.2	31.9	46.4	47.0	25.8	29.0	29.8	30.8	11.0	10.8
24	99.8	101.2	88.5	91.8	32.3	30.7	48.1	48.7	26.0	29.0	41.0	52.0	3.0	3.2
25	93.0	94.1	89.8	94.8	32.2	30.5	77.1	81.1	23.0	23.5	39.0	44.5	1.0	— 0.8
26	97.0	96.0	95.0	95.7	34.0	32.0	76.8	79.9	30.0	21.2	22.2	23.5	— 2.8	— 2.0
27	100.8	102.1	95.2	95.6	33.5	31.5	38.9	39.1	21.0	21.3	34.5	39.0	5.5	6.0
28	104.9	104.1	91.8	94.5	32.0	30.0	75.0	75.8	21.5	21.8	29.0	30.0	12.0	10.5
29	93.3	93.8	94.3	97.5	30.5	28.8	43.6	44.2	20.8	20.8	32.0	43.0	0.5	0.5
30	97.8	97.8	80.0	84.9	28.1	30.9	74.3	77.0	21.2	20.8	33.0	47.0	— 2.0	— 2.0
31			87.8	89.2	29.0	(?)	40.4	41.4	19.0	19.8				

Solar No. 1 read from + 10° to 200°, facing N.; Solar No. 2 from + 13° to 200°, facing S.; Solar No. 6 from + 15° to 210°.; Solar No. 4 from + 0° to 215°.

During March Solar No. 1 exposed facing due N.; Solar No. 6 exposed bulb facing due S.

* Below scale which reads + 15°. † Below scale which reads + 10°. ‡ Found displaced.

‖ Below scale which reads + 13°. § No. 2 exposed March 24. ¶ No. 4 exposed May 30.

TABLE CLXIV.—*Solar and terrestrial thermometer readings at Fort Conger, 1881 to 1883*—Continued.

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

Date.	October, 1882.				November, 1882.		December, 1882.		January, 1883.		February, 1883.		March, 1883.			
	Solar.		Terrestrial.		Terrestrial.		Terrestrial.		Terrestrial.		Terrestrial.		Solar.		Terrestrial.	
	No. 4.	No. 6.	No. 1.	No. 6.	No. 1.	No. 6.	No. 1.	No. 6.	No. 1.	No. 6.	No. 1.	No. 6.	No. 4.	No. 6.	No. 1.	No. 6.
1	18.0	19.0	−2.0	−2.0	−25.2	−23.0	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
2	13.0	13.0	−4.0	−3.2	−35.0	−33.2	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
3	11.4	12.0	−2.0	−2.3	−36.5	−33.5	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
4	10.2	12.0	−10.5	−12.0	−35.0	−35.5	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
5	11.5	20.2	−20.0	−18.0	−44.0	−39.5	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
6	10.0	20.2	−21.5	−18.8	−45.0	−40.2	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	−16.1
7	8.0	12.5	−21.2	−19.0	−44.8	−41.2	(*)	(*)	−49.0	−46.5	(*)	(*)	(*)	(*)	−15.0	−38.5
8	8.5	14.5	−23.0	−21.8	−45.0	−41.0	(*)	(*)	(*)	(*)	(*)	(*)	9.1	(*)	−22.0	−10.0
9	14.8	10.8	−18.8	−21.0	−49.0	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	6.1	−19.0	−40.0
10	4.5	5.0	−19.0	−21.0	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	1.8	−42.8	......
11	4.7	Zero.	−12.0	14.4	(*)	(*)	−40.0	43.5	(*)	(*)	(*)	(*)	12.4	4.0	−44.8	−44.0
12	4.8	5.0	−17.0	−20.5	(*)	(*)	−45.3	41.0	(*)	(*)	(*)	(*)	31.2	33.0	−§4.1	−11.4§
13	6.0	5.0	−14.0	−11.0	(*)	(*)	−49.0	(*)	(*)	(*)	(*)	(*)	0.7	4.0	−34.8	−35.9
14	0.5	(¶)	−11.4	−12.5	−47.5	−48.0	(*)	(*)	(*)	(*)	(*)	(*)	11.5	19.0	−30.0	−33.0
15	(¶)	(¶)	−8.4	−9.5	−33.0	−35.0	(*)	(*)	(*)	(*)	(*)	(*)	23.0	37.5	−13.0	−13.0
16	1.0	(¶)	−24.0	−31.0	−43.0	−40.0	(*)	(*)	(*)	(*)	(*)	(*)	25.0	13.0	−30.5	−28.0
17	(¶)	(¶)	−32.0	−28.0	52.0	−44.0	(*)	(*)	(*)	(*)	(*)	(*)	21.0	29.8	−31.0	−29.2
18	(¶)	(¶)	−28.0	−36.0	−41.0	−41.8	−50.0	−47.0	(*)	(*)	(*)	(*)	32.0	23.8	−26.8	−28.0
19	(¶)	(¶)	−38.0	−32.0	(*)	−42.5	(*)	(*)	(*)	(*)	(*)	(*)	33.0	40.1	−25.0	−27.3
20	(¶)	(¶)	−35.0	−32.0	−39.0	−36.0	−35.0	−35.2	(*)	(*)	−38.0	−34.0	33.8	40.5	−25.2	−26.5
21	(¶)	(¶)	−27.0	−30.0	−41.0	−44.5	(*)	(*)	(*)	(*)	−23.2	−20.0	34.2	40.6	−27.8	−29.5
22	(¶)	(¶)	−33.0	−27.0	−48.0	−43.0	(*)	(*)	(*)	(*)	−30.0	−40.0	5.2	7.2	−20.0	−22.0
23	(¶)	(¶)	−25.5	−22.8	(*)	(*)	−45.5	−46.2	(*)	(*)	(*)	(*)	22.8	30.2	−24.2	−26.0
24	(¶)	(¶)	−33.3	−30.2	(*)	−46.0	(*)	(*)	(*)	(*)	(*)	(*)	22.9	30.4	−34.0	35.9
25	(¶)	(¶)	−31.0	−27.8	(*)	−45.2	(*)	(*)	(*)	(*)	(*)	(*)	12.4	16.2	−35.9	−27.5
26	(¶)	(¶)	−31.5	−28.2	−50.0	−45.5	(*)	(*)	(*)	(*)	(*)	(*)	15.0	21.0	−18.9	−20.0
27	(¶)	(¶)	−25.5	−23.5	−48.0	−43.2	(*)	(*)	(*)	(*)	(*)	(*)	24.4	35.0	−16.8	−17.9
28	(¶)	(¶)	−33.8	−30.0	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	16.5	17.2	−13.8	−14.1
29	(¶)	(¶)	−34.0	−30.2	(*)	(*)	−34.0	−30.2	−43.0	−40.0	......	......	35.0	50.2	−13.0	−14.1
30	(¶)	(¶)	−30.0	−34.8	(*)	(*)	−30.0	−34.3	−44.1	−40.0	......	......	43.6	58.3	−27.0	−28.9
31	(¶)	(¶)	−27.0	−30.2	......	......	(*)	(*)	(*)	(*)	......	......	42.5	56.2	−36.7	−38.6

Date.	April, 1883.				May, 1883.				June, 1883.				July, 1883.			
	Solar.		Terrestrial.		Solar.		Terrestrial.		Solar.		Terrestrial.		Solar.		Terrestrial.	
	No. 4.	No. 6.	No. 1.	No. 6.	No. 4.	No. 6.	No. 1.	No. 6.	No. 4.	No. 6.	No. 1.	No. 6.	No. 4.			No. 6.
1	43.8	53.5	−45.0	−42.8	72.0	80.9	−26.1	−23.9	117.2	119.0	(†)	16.6	(‡)	....	....	(‡)
2	38.8	46.5	−45.2	−47.2	78.8	33.8	−15.2	−16.8	108.0	104.4	....	17.1	97.5	....	....	(‡)
3	39.5	47.5	(*)	(*)	67.8	77.0	−19.0	−20.8	105.1	106.8	....	24.3	93.0	....	....	31.0
4	38.8	45.7	−35.0	−37.0	68.2	79.5	−19.8	−22.3	105.0	108.1	....	21.5	105.5	....	....	31.3
5	41.8	46.8	−31.6	−33.3	93.2	102.3	−20.5	−23.2	78.0	78.0	....	22.8	92.0	....	....	31.5
6	43.2	54.0	−34.2	−37.0	76.8	84.0	−18.0	(†)	100.5	104.7	....	22.0	94.0	....	....	30.1
7	26.2	30.8	−35.2	−37.7	79.2	88.2	−13.8	−13.5	83.5	80.1	....	23.0	90.2	....	....	32.4
8	55.5	66.8	−34.2	−35.8	79.6	87.5	−10.0	−13.0	86.9	89.6	....	22.0	95.1	....	....	32.3
9	51.1	62.8	−41.2	−43.0	84.0	91.5	−4.8	−5.2	87.4	87.0	....	19.3	87.0	....	....	31.5
10	45.0	54.5	−42.8	−45.8	88.4	93.3	−3.0	−3.0	74.0	66.3	....	20.8	89.0	....	....	29.0
11	45.7	57.8	−43.0	−46.0	87.1	93.0	−0.5	Zero.	95.5	98.4	....	24.7	91.0	....	....	28.0
12	36.2	43.8	−38.5	−41.0	86.9	94.0	−0.8	−1.1	58.5	58.8	....	24.3	103.0	....	....	29.0
13	54.0	59.5	−41.0	−38.0	80.9	82.1	10.0†	9.0†	93.0	93.7	....	22.5	102.9	....	....	32.0
14	49.0	61.0	−38.0	−42.0	85.0	87.0	6.0	5.0	95.7	95.5	....	26.8	81.5	....	....	30.5
15	48.0	57.0	−39.5	−37.0	71.2	72.8	4.0	4.0	85.2	88.0	....	24.0	97.6	....	....	30.2
16	48.5	59.5	−40.0	−37.0	81.2	75.5	4.8	2.5	91.0	(‖)	....	21.5	105.0	....	....	33.0
17	51.5	63.5	−41.5	−35.5	96.9	102.0	−4.5	−4.0	92.5	....	....	27.0	100.5	....	....	32.0
18	53.8	64.0	−40.0	−37.0	89.1	96.4	−6.2	−6.2	98.0	....	....	27.0	101.9	....	....	32.5
19	63.0	73.5	−33.5	−31.0	107.0	112.5	−5.5	−6.0	89.0	....	....	24.0	90.7	....	....	30.5
20	60.2	65.0	−40.0	−37.8	97.8	102.0	−11.6	11.0	93.8	....	....	27.7	98.5	....	....	28.1
21	60.0	69.5	−43.5	−40.8	108.0	111.0	9.8†	10.2†	91.6	....	....	27.6	92.0	....	....	26.8
22	70.5	79.0	−28.5	−26.5	100.5	103.0	10.9†	12.1†	90.5	....	....	25.6	95.8	....	....	28.9
23	58.5	69.5	−31.2	−29.0	92.4	99.3	9.8	9.2	71.5	....	....	27.0	63.8	....	....	28.6
24	63.2	72.3	−31.0	−28.3	70.8	73.0	18.0	19.0	103.0	....	....	26.9	79.0	....	....	28.1
25	63.0	73.0	−31.0	(‡)	86.0	89.1	14.5	15.9	101.7	....	....	26.2	46.0	....	....	25.0
26	60.5	73.1	−27.8	−29.5	101.2	102.7	13.2	13.8	60.9	....	....	27.9	78.0	....	....	24.8
27	71.1	76.4	−19.0	−17.8	70.0	71.0	13.3	14.5	83.0	....	....	27.5	67.5	....	....	(‡)
28	72.0	80.0	−15.0	−14.0	99.2	109.6	10.2	11.0	62.0	....	....	27.5	85.0	....	....	(‡)
29	72.1	80.8	−22.3	−20.1	94.2	95.2	5.8	6.0	93.3	....	....	26.8	85.6	....	....	(‡)
30	68.5	78.3	−23.5	−25.6	115.9	119.0	15.0	15.7	91.4	....	....	†26.8	90.2	....	....	(‡)
31	....	....	....	....	120.9	124.5	16.0	3.0	....	....	....	....	95.0	....	....	35.2

Scale of solar No. 4 read to 0°; Scale of solar No. 6 read to 15°; estimated to zero.

* Below scale, −50° [−45°.6 C.]. † No. 1 found injured. ‡ Column broken. § Found displaced. ‖ No. 6 damaged. ¶ Sun gone for the winter.

TABLE CLXV.—*Solar radiation shown by excess of maximum black-bulb in vacuo (in sun) over maximum air (in shade) temperatures at Fort Conger.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1881.		1882.								1883.				
	Sept.	Oct.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	March.	April.	May.	June.	July.
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
1		11.0		51.2	75.1	72.0	52.2	45.7	41.6	5.0	([a])	66.5	77.5	89.6	
2		6.7		51.0	65.3	63.9	5.5	10.9	12.3	1.0		65.1	80.6	72.6	56.3
3		6.5		65.0	65.1	62.4	28.9	30.9	14.7	0.7		69.4	76.4	68.2	55.1
4		23.9		75.2	65.7	60.0	47.6	51.2	47.0	7.0		60.4	78.9	70.8	66.6
5		15.0		52.6	72.4	55.0	46.5	44.5	22.6	23.2		52.4	**95.9**	46.6	54.6
6		16.0		72.9	64.6	54.7	51.2	5.4	12.7	24.4		65.9	76.5	69.2	60.5
7		9.0		76.6	82.2	57.5	56.6	35.0	12.4	17.5		39.3	72.6	54.1	45.3
8	25.0	− **1.8**		79.6	85.1	52.5	54.6	38.9	14.8	21.0	− 0.8	73.4	74.1	53.4	52.8
9	45.4	11.9		59.0	86.7	53.2	51.0	45.5	56.0	21.7	16.6	78.6	74.5	53.5	45.7
10	20.7	11.5	30.6	50.6	79.2	62.0	62.0	16.4	44.9	− **2.0**	28.3	69.9	75.3	43.4	52.0
11	45.0	14.8		61.4	52.5	51.6	26.6	51.0	40.9	− 1.9	32.3	72.0	69.6	65.6	50.6
12	13.5	17.5		57.8	61.0	20.4	50.6	42.5	48.8	2.8	45.5	56.5	72.1	28.3	50.6
13	18.0	22.5		57.8	45.6	55.0	46.0	41.9	49.0	1.5	22.4	73.8	53.9	57.4	63.0
14	38.8	21.0		57.5	**88.5**	54.9	11.7	32.0	38.6	− 1.5	− 1.0	75.4	60.2	58.1	45.6
15	35.1	23.0		45.9	75.4	24.1	43.9	25.0	35.1		20.3	71.0	67.1	53.6	52.1
16	44.6	28.8		61.3	41.7	41.0	42.8	42.5	39.6	2.2	31.0	73.1	60.6	54.0	60.3
17	9.2	([b])		58.5	49.0	23.2	41.8	10.3	4.4	([b])	34.0	73.6	84.4	52.9	52.3
18	9.1			64.0	72.0	43.7	51.4	41.8	5.5		41.0	73.9	76.9	61.0	55.8
19	22.0			52.5	74.5	52.8	51.1	49.0	37.2		37.1	78.4	90.9	56.0	48.0
20	37.6			71.2	73.0	61.6	51.1	41.5	43.0		40.5	73.1	75.6	55.4	48.4
21			40.5	67.3	70.2	50.8	46.4	48.2	5.5		47.2	73.4	80.2	52.9	51.9
22	39.0		44.5	57.7	68.1	57.6	52.1	43.5	27.0		10.7	78.2	70.7	52.2	49.6
23	21.0		42.5	65.9	75.6	47.0	30.6	9.9	5.8		32.2	73.3	71.6	32.6	25.7
24	37.0		46.6	64.0	71.0	56.2	50.5	9.7	31.0		40.4	72.6	43.9	64.3	38.7
25	25.0		49.6	72.2	74.6	50.3	53.8	43.6	29.7		23.5	73.6	61.6	64.1	10.6
26	34.0		46.1	72.0	66.6	46.7	50.5	45.1	5.5		19.1	76.5	79.3	24.9	41.4
27	18.0		50.8	71.2	46.4	52.3	50.1	7.3	13.0		36.3	72.7	46.5	45.1	29.2
28	32.0		59.4	72.8	65.6	53.7	53.5	41.8	4.0		13.9	76.4	82.2	25.1	47.3
29	28.0		60.0	69.0	61.2	45.8	59.7	11.4	18.0		47.0	74.2	71.3	55.1	44.2
30	13.8		36.0	72.3	30.0	44.8	46.6	48.6	27.0		57.8	75.7	89.6	54.2	44.7
31			64.3		72.3		48.4	14.5			57.1		94.1		46.8
Means	[c]27.8	[d]14.8	[e]47.6	61.2	67.0	50.9	45.7	33.1	26.3	[f]8.2	[g]30.5	70.3	73.7	54.5	[h]48.2
Means in centigrade	15.44	8.22	26.44	33.99	37.22	28.27	25.28	18.38	14.61	4.56	16.94	30.05	40.94	30.28	26.78

[a] Sun returned February 28. [b] Sun gone for winter. [c] 22 days. [d] 16 days. [e] 12 days. [f] 15 days. [g] 24 days. [h] 30 days.

TABLE CLXVI.—*Terrestrial radiation shown by deficit of minimum radiating thermometer below minimum in shelter, Fort Conger, 1881–'83.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Date.	1881.		1882.						1883.						
	Sept.	Oct.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
1	......	3.3	6.6	6.2	5.2	5.9	8.2	*7.0	*4.8	*1.2	*0.9	15.3	13.1	6.6	......
2	......	4.1	†0.1	4.8	5.7	8.2	12.6	*6.9	*6.2	......	*7.5	13.2	7.8	5.6	......
3	......	2.3	†1.2	4.7	5.7	5.8	12.2	*9.0	*7.0	......	*7.0	*12.7	8.1	6.1	†0.1
4	......	8.0	†0.3	3.2	4.8	7.8	10.5	*15.5	*3.9	......	*9.3	9.1	10.1	5.7	†1.1
5	......	9.5	†0.4	5.6	5.3	9.1	13.0	*12.4	*10.6	*1.0	*5.0	13.5	10.5	3.1	†0.6
6	......	8.8	0.6	5.2	4.3	11.1	12.7	*11.5	*18.0	*3.0	*3.3	12.2	9.2	4.4	†1.3
7	......	16.5	1.4	5.7	4.9	10.3	11.6	*12.8	11.0	*5.8	9.7	13.2	9.3	2.6	†1.0
8	2.6	3.1	2.8	4.9	7.7	10.8	9.5	*11.9	*11.3	*3.9	4.4	12.4	12.5	4.3	2.6
9	4.1	8.4	0.6	6.2	7.6	9.5	*9.5	*12.4	*13.4	*10.0	5.0	12.9	9.3	6.3	0.3
10	8.9	5.4	2.0	5.1	7.4	10.6	*9.0	*16.7	*10.5	*9.0	*13.2	13.0	9.4	4.1	0.4
11	3.4	7.8	1.6	6.0	7.7	11.4	*8.5	14.8	*8.3	*9.0	7.3	12.2	8.8	3.7	1.4
12	4.6	6.9	2.0	6.2	7.7	12.9	*9.0	12.3	*14.4	*15.2	......	12.9	8.3	2.4	3.3
13	†3.4	7.5	2.2	7.6	7.2	8.5	*24.8	*12.0	*4.8	*9.1	7.1	12.8	7.8	4.6	2.0
14	4.4	9.0	2.5	6.8	7.8	9.5	21.7	*14.0	*5.0	*4.4	9.0	14.9	6.0	5.0	2.3
15	5.0	8.5	2.0	5.8	6.6	5.7	14.1	*20.8	*4.0	*2.0	†**0.8**	12.5	6.6	3.4	2.8
16	6.2	10.3	1.2	6.3	8.5	18.5	11.2	*13.3	......	......	9.3	13.2	7.4	4.7	3.8
17	5.0	......	2.0	6.0	5.0	12.4	15.2	*12.0	*4.0	*1.3	9.1	16.3	9.8	3.5	3.2
18	2.1	......	2.8	5.7	6.1	18.6	2.5	18.8	*3.4	*4.0	8.4	12.7	9.3	3.0	3.2
19	4.2	......	2.4	8.6	8.3	11.5	8.0	*17.0	*2.1	*9.7	7.7	12.0	12.0	5.8	4.9
20	4.0	......	2.9	6.8	7.9	12.4	9.8	11.5	*2.0	10.3	9.9	13.6	28.3	3.6	5.9
21	......	......	2.7	7.8	9.5	10.7	10.5	*10.5	*5.1	8.5	10.4	14.7	6.9	3.9	6.3
22	9.5	......	3.0	7.4	7.1	17.0	11.5	*13.0	*8.7	14.6	8.8	12.7	7.3	5.0	5.2
23	7.0	......	3.1	6.4	7.1	9.7	*11.5	14.2	*6.7	*1.0	10.9	11.3	8.2	5.4	5.6
24	4.9	......	3.8	6.2	7.0	12.1	*10.8	*20.1	*4.3	*0.6	10.5	12.2	4.5	4.7	5.7
25	7.5	......	4.1	5.5	9.1	10.8	*12.4	***39.0**	*6.0	......	17.5	13.1	5.5	4.1	6.0
26	4.5	......	3.7	5.2	9.4	10.8	12.5	*21.3	*9.0	......	7.1	12.1	4.9	4.7	6.2
27	14.3	......	3.2	6.3	8.4	10.4	12.6	*9.0	*12.9	......	7.6	8.2	5.8	5.6	......
28	†**3.8**	......	4.2	6.3	9.4	11.4	*13.0	*11.0	*14.0	......	7.6	6.2	4.5	4.7	......
29	13.5	......	4.4	6.7	9.0	11.9	*4.0	*25.9	11.0	......	8.7	9.8	8.8	5.1	......
30	10.6	......	5.4	4.8	10.6	14.5	*5.0	*21.0	11.1	......	11.3	11.2	6.5	4.4	......
31	......	......	3.3	3.8	......	10.4	......	*6.1	*4.0	......	11.5	......	18.2	......	5.1
Means	5.4	7.5	2.4	5.9	7.3	11.0	*11.2	*14.6	*7.9	*6.2	8.1	12.4	9.2	4.5	2.9
Means in centigrade	3.00	4.17	1.33	3.28	4.06	6.11	6.22	8.11	4.39	3.44	4.50	6.89	5.11	2.50	1.61

* Exceeding this amount. † Thermometer below scale — 50° [— 45°.6 C.]

The extreme and mean readings of the maximum black-bulb thermometer in 1881–'83, as well as of the British observations, 1875–'76, at the same place, are as follows:

TABLE CLXVII.—*Extremes and means of solar thermometers at Fort Conger.*

$\varphi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

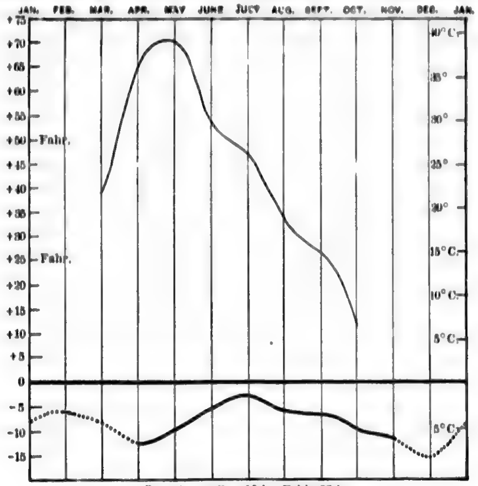
Month.	1875–'76.		
	Max.	Min.	Mean.
	°	°	°
October (1st to 11th)	26.0	11.0	20.8
March (23d to 30th)	42.0	−3.0	38.5
April	92.0	32.0	59.4
May	119.0	69.0	98.0
June	**128.0**	66.5	98.8
July	106.0	54.5	89.3

Month.	1881–'82. Facing north.			1881–'82. Facing south.		
	Max.	Min.	Mean.	Max.	Min.	Mean.
	°	°	°	°	°	°
September (8th to 30th)	72.6	18.8	41.2	68.6	9.5	42.1
October (1st to 16th)	18.9	2.0	12.6	15.0	Zero	6.7
March (21st to 31st)	38.2	15.3	28.1	54.3	16.0	35.0
April	79.1	17.9	54.6	82.2	14.9	61.0
May	**108.2**	59.7	85.8	**111.0**	57.0	89.1
June	104.9	61.3	87.4	104.1	57.0	89.0
July	102.5	50.7	86.7	104.6	55.6	86.2

Month.	1882–'83. Facing north.			1882–'83. Facing south.		
	Max.	Min.	Mean.	Max.	Min.	Mean.
	°	°	°	°	°	°
August	95.8	40.4	70.3	97.0	39.1	72.8
September	69.0	20.6	43.5	75.0	21.5	48.4
October (1st to 13th)	18.0	0.5	9.7	20.2	Zero	11.5
March (10th to 31st)	43.6	0.7	23.8	58.3	1.8	28.9
April	72.1	26.2	53.1	80.8	30.8	62.5
May	**120.9**	67.8	88.1	**124.5**	71.0	93.0
June (1st to 15th)	117.2	58.5	89.6	119.0	58.8	91.9
July	105.5	46.0	86.9	-------	-------	-------

The following chart shows for each month in the year the mean excess in degrees Fahrenheit of the maximum black-bulb in the sun over the ordinary bright-bulb maximum in the shade. It likewise exhibits the mean difference between the radiating minimum and the ordinary minimum in the shelter. The value of the terrestrial radiation curve from December to March, inclusive, is necessarily incorrect, owing to the fact that the minimum radiating thermometer was scaled only to $-50°$ [$-45.6°$C.].

CHART No. 17.—*Annual curves of solar and terrestrial radiation at Fort Conger*, $\phi = +81° 44'$, 1881'–83.



Sun absent Oct. 16th—Feb'y 28th
Solar radiation; excess of heat.
Terrest'l " ; deficit of heat, (dotted lines, doubtful values.)

The solar radiation curve is from March 1 to October 16, the time during which the sun is present at Fort Conger. From data contained in Table 165 it will be seen that the mean black-bulb in the sun in March is 37.3° [20.7°C.] above the ordinary shaded thermometer. The excess rises steadily to its maximum, 70.4° [39.1°C.], in May, after which the mean difference gradually and steadily decreases to its minimum value in September and October [16 days], 26.9° [14.9°C.] and 11.7° [6.5°C.], respectively. The effect of increasing humidity or aqueous vapor in intercepting the solar heat, is shown in a most marked manner by the above table and curves, in connection with other data in this report.

As long as the ground remains frozen and covered with snow, and the sea ice is unbroken, the value of the solar radiation steadily increases at Fort Conger, but the instant these conditions change the increase is checked and some decrease begins.

The maximum excess for thirty consecutive days occurred from April 13 to May 12, 1883, 75.4° [41.9° C.].

The sea ice reached its maximum thickness between May 1 and 10, and on May 9 the thermometer first remained above zero [$-17.8°$ C.]. On May 13 a fall of damp, heavy snow occurred, and the mean temperature rose to 25.5° [$-3.6°$ C.]. Traveling parties reported the snow soft and damp after this date, and on May 22 the temperature rose for the first time above 32° [0° C.]. The temperature fell later in the month, and for three days—May 30 to June 1—the excess of the solar thermometer averaged 91.1° [50.6° C.]. On June 2 the temperature rose again above 32° [0° C.]. The maximum difference at Point Barrow and Fort Rae occurred in April, a month earlier than at Fort Conger.

The maximum single readings of the black-bulb thermometer at Fort Conger were recorded both years in May, being 111° [43.9° C.] May 14, 1882, and 124.5° [51.4° C.] May 31, 1883. The highest single readings at Point Barrow and Jan Mayen were almost coincident, being 127° [52.8° C.] at the latter station May 16, 1883, and 120.8° [49.4° C.] at the former station May 14, 1883. The highest reading at Fort Conger in 1876, 128.0° (53.3° C.), occurred June 6, five days before the snow had melted sufficiently for water to run freely. At Fort Rae, an inland station, the highest solar reading was 140.4° [60.2° C.] June 23, 1883, almost at the time of the sun's maximum declination.

The differences between the maximum readings of the black-bulb and the ordinary thermometer in the shade were on several occasions remarkably great. On May 7, 1882, the difference was 82.2° [45.7° C.]; May 9, 86.7° [48.2° C.]; and May 14, 89.5° [49.2° C.]. In 1883 the differences were even greater, amounting to 94.1° [52.3° C.] May 31 and to 95.9° [53.3° C.] on May 5. It is interesting to remark that on this last day also occurred the highest solar reading and greatest recorded differences for the year at Point Barrow.

TERRESTRIAL RADIATION.

The minimum radiation thermometers, *in vacuo*, J. Green, New York, were fully exposed 4 inches [101.6mm] above the ground. Two instruments, one facing due north and the other south, were read at 7 p. m., Washington mean time (7.49 p. m., local mean time). As will be seen from Table CLXVIII, the instruments gave substantially the same indication. Unfortunately, as the thermometers were only scaled down to −50° [−45.6° C.], but few readings could be obtained during the absence of the sun.

From November 7 to March 6 there were but twelve days on which the minimum did not fall below the scale, −50° [−45.6° C.].

The following is a résumé of the observations:

TABLE CLXVIII.—*Extremes and means of terrestrial thermometers at Fort Conger.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Month.	1881 and 1882.					
	Max.	Min.	Mean.	Max.	Min.	Mean.
	°	°	°	°	°	°
September 8th to 30th	15.5	−23.0	−0.9	14.0	−21.0	−0.8
October 1st to 16th	1.5	−36.5	−19.3	0.0	−40.0	−21.2
July	38.0	28.0	32.2	38.4	28.8	32.2
Month.	**1882 and 1883.**					
August	33.0	19.0	27.3	33.9	19.8	27.7
September	19.0	−8.8	6.6	20.0	−7.8	6.7
October	−2.0	−35.0	−22.1	−2.0	−36.0	−22.0
November	−25.2	(*)	(†)	−23.0	(*)	(†)
December	−35.0	(*)	(*)	−35.2	(*)	(*)
January	−43.0	(*)	(*)	−40.0	(*)	(*)
February	−23.2	(*)	(*)	−20.0	(*)	(*)
March 6th to 31st	4.1	(*)	−25.0	11.4	(*)	−25.3
April	−15.0	(*)	−34.9	−14.0	(*)	−34.8
May	18.0	−26.1	−0.6	19.0	−23.9	−0.1
June	-----	-----	-----	27.9	16.6	24.3
July 3d to 26th	-----	-----	-----	33.0	24.8	30.1

* Below scale −50° [−45.6° C.]. † Below scale −44° [−42.2° C.].

The differences between the mean minima, from the ordinary thermometer and from the radiating thermometer, is known only for seven full months. The difference in April amounted to 12.4 [6.9°C.], which gradually and steadily decreased to a minimum of 2.6° [1.4° C.] in July, whence it increased to 9.7° [5.4° C.] in October. The differences for the missing months were greater than is given below, as these values depend on many days on which the thermometer registered below the scale −50° [−45.6° C.] and so gave only negative knowledge as to the radiation for that day.

The annual fluctuation is shown by Chart 17, from which it is seen that the value decreases from its minimum in July to a maximum in December. Although the values for December and January are imperfectly known, yet it is probable that the minimum falls in December, as at Point Barrow. At Fort Rae the maximum value obtains in January.

On December 28, 1882, at Fort Conger, a difference of 31° [17.2° C.] was noted. The greatest difference (excluding an obvious error, February 24, 1883) at Point Barrow occurred only two days later, 24.9° [13.9° C.]. At Fort Rae, as might be expected from an inland station with the sun absent at midnight in summer, the maximum difference on one day was on July (18th), 1883, 24.7° [13.7° C.].

TEMPERATURE OF THE EARTH.

No extended observations of the temperature of the earth were made, as the expedition was not provided with suitable thermometers for the purpose.

Most unfortunately the glacial thermometer, Hicks No. 6, bulb about 3 feet [about 1^{m}] below the surface of the earth, left in position by the British expedition, was broken in an attempt to move it. It read 26° [$-3^{\circ}.3$ C.] on August 11, not far from the date at which the maximum temperature of the year would be reached.

On November 18, 1881, the temperature 18 inches [457.19^{mm}] below the surface of the earth was 7° [$-13^{\circ}.9$ C.], and at 2 inches [50.8^{mm}] 3.0° [-16.1° C.].

The ground was found to be permanently frozen, at depths varying from 20 to 24 inches [0.5^{m} to 0.6^{m}], while establishing the bench-mark, in putting up astronomical and pendulum piers. There is good reason to believe that the ground is not free from frost, under the most favorable circumstances, to a greater depth than 3 to 6 feet [about 1^{m} to 2^{m}], according to the character of the soil.

Two remarkable land-slips near Fort Conger and one in the interior of Grinnell Land confirmed this opinion; and in connection with two of them were observed remarkable conditions of heavy land ice.

On August 15, 1882, while traveling over the broken country between Fort Conger and Water-course Bay, Sergeant Brainard called my attention to a body of ice which a land-slide had disclosed near the top of the hill on the west side of Water-course Creek. The crest of the hill was at least 60 feet [18^{m}] above the level of the creek, and the slide had left a fresh clean break of 3 or 4 feet [.9 or 1.2^{m}]. The upper half of the earth had thawed, but the lower half was frozen, and, what was surprising, rested on a solid, hard, clear mass of ice. It was plain that the ice was of very considerable extent, but as to how it came there could not be satisfactorily accounted for. The earth above was covered with scanty flora, showing that such a condition of affairs was not new, and the configuration of the ravine forbade the idea of it having ever dammed, and so backed up, a summer torrent.

Late in August, 1882, an extensive land-slide occurred near the station from the side of a precipitous hill, the base of which had been worn into by the brook beneath. The crest of the hill was nearly 50 feet [15^{m}] above the creek, and the slope was about 70 degrees. Eventually the clean break became visible, showing that the undisturbed part of the hill, to the thickness of 10 or 12 feet [3 or 4^{m}], rested on an extensive mass of solid frost (to the taste) ice. The earth was solidly frozen from the ice upwards to within perhaps 2½ feet [$.75^{m}$] of the surface.

The body of ice visible was of very considerable extent, there being a solid mass at least 15 feet [4^{m}] long, and 3 to 5 feet [.9 to 1.5^{m}] wide. There was no break in its continuity, as far as could be determined, and the possibility that it underran the whole adjacent hill was not inconsistent with any of the surroundings. As in water-course ravines there was no possibility, with the present contours of the ground, that this ice could have formed from the damming. The hill above—a stiff, light-colored clay—was covered with scanty flora. It was noticeable that scarcely a stone or pebble was to be seen in the fractured earth.

The possibilities of these masses of ice being remains of the glacial bed which undoubtedly once covered all of Grinnell Land, or as having formed when the rapidly rising land was at the level of the sea, seemed the correct solution.

Sergeant Brainard carefully examined this body of ice at a later period. He reports that the earth above the ice showed many distinct layers of different-colored soils, which to him indicated its gradual and easy deposition on the ice, or under earth layers. The edge of the ice projected irregularly, but in no place was there a break in its continuity, nor were its limits apparent except outwards from the hill-side.

A large recent land-slide was noticed by Sergeant Linn and myself, July, 1882, from a bluff overlooking Very River. The earth was frozen from near the surface as far down as the clean fracture could be seen. Our exhausted condition precluded any careful or extended examination of it.

TEMPERATURE OF THE SEA.

Observations of the temperature of the sea were made every four hours from July 7 to July 30, on which day hourly observations were commenced and continued to include August 17, 1881, when the *Proteus* was ready to leave Discovery Harbor (Fort Conger) on her return voyage.

The surface observations were supplemented by others at the depth of 33 feet [10^{m}] whenever the conditions were favorable.

Occasional attempts were made to obtain serial temperatures by means of a Negretti-Zambra instrument, but in most cases the thermometer did not reverse, and consequently the results were unsatisfactory. The detailed temperatures are given in Miscellaneous Observations, Table CLII.

The mean daily temperature of the surface varied from 39° [4° C.] to 44° [7° C.] from St. Johns, Newfoundland, until the vessel was well into Davis Strait.

On July 11 the first ice was fallen in with, being the outskirts of the pack bordering the SW. coast of Greenland, in 61.5° N., 53.3° W. It proved to be open sailing ice, which was prevalent from 25 to 30 miles.

"On striking the ice," says my journal, "the temperature of the surface water sank from 40° [4.4° C.] to 34.7° [1.5° C.], while the temperature at 33 feet [10m] was 33.7° [0.9° C]. After passing the ice surface temperature rose to 38.2° [3.4 C.]." A second belt of open sailing was met with in 62.4° N., 53° W., about 10 miles wide. The surface temperature fell to 34.2° [1.2° C.], but rose after passing it to 38° [3.3° C.]. The temperature thence to Godhavn remained remarkably steady, varying from 36.2° [2.3° C.] to 39.7° [4.3° C.] for the surface, with a mean of 38.2° [3.4° C.], and of 36.8° [2.7° C.] at the depth of 33 feet [10m].

The observations at Godhavn covered five days. The mean surface temperature was 44.4° [6.9° C.], and at 33 feet [10m] 43.3° [6.3° C.].

The mean temperature of Disco Bay, in running across, was 45° [7.2° C.], but at Ritenbenk, from two days' observations the surface gave a mean of 42.2° [5.7° C.], and 33 feet [10m] of 40.3° [4.6° C.].

In running through the Waigat the temperature remained unchanged at 39.7° [4.3° C.], but in running up to Upernivik along the coast it dropped to 38.7° [3.7° C.], and later to 37.7° [3.2° C.], with two observations as low as 36.2° [2.3° C.].

At Upernivik the observations covered six days, which gave a mean of 37° [2.8° C.] for the surface, and 36.3° [2.4° C.] at the depth of 33 feet [10m]. In crossing Mellville Bay no pack was met with, but in 75° N., 65° W., open sailing ice was seen to the westward. The sea had a mean temperature of 35° [1.7° C.], with a minimum single observation of 31.7° [−0.2° C.].

In the vicinity of Cape York considerable ice, in small detached and open packs, was seen and the temperature varied, according to proximity to the ice, from 31.7° [−0.2° C.] to 36.7° [2.6° C.]. The mean temperature was 34.9° [1.6° C.] for the surface, against 35.9° [2.2° C.] at 33 feet [10m]. For the first time the surface was colder than the water below, and that this condition was general is proved by the fact that out of 25 simultaneous observations in the neighborhood of Cape York, the lower water was colder 22 times, and there was no difference twice.

From this it appears that the water is 1° [0.6° C.] colder at the surface than at 33 feet [10m], 0.1° [0.06° C.] colder than at 60 fathoms [110m] and 3.4° [1.9° C.] warmer than at 180 fathoms [329m]. At 60 fathoms [110m] the temperature was 35° [1.7° C.], and at 180 fathoms [329m] 31.5° [−0.3° C.].

The temperature of surface and at 33 feet [10m] fell steadily at Carey and Littleton Islands, being 33.6° [0.9° C.] surface, 33.3° [0.7° C.] 33 feet [10m] at the former and 33° [0.6° C.] surface, 32.2° [0.1° C.] 33 feet [10m] at the latter. Nearer land, until Cape Alexander was reached, the water was about 2° [1° C.] warmer. The same mean surface temperature as at Littleton Island prevailed until Cape Hawks was reached. Kane Sea, however, was entirely free from ice, and possibly the surface water may have come in from the south on a flowing tide.

However that may have been, at Cape Hawks the temperature fell very decidedly, being 32.3° [0.2° C.] at surface, 31.5° [−0.3° C.] at 33 feet [10m], and 30.7° [−0.7° C.] at 30 fathoms [55m].

Running near the Grinnell Land coast the mean surface temperature of Cape Hawks was carried northward to Carl Ritter Bay, 32.4° [0.2° C.], with 31.3° [−0.4° C.] at 33 feet [10m] and 30.4° [−0.9° C.] in 42 fathoms [77m]. On approaching Hall Basin another decided fall of temperature took place, and in hourly observations for six days only four readings were as high as 31° [0.6° C.].

During six days between Cape Lieber and Hannah Island the sea remained steady at 29.6° [−1.3° C.] for the surface and 29.1° [−1.6° C.] in 33 feet [10m]. The mean daily range for surface was 1.8° [1.0° C.], and at 33 feet [10m] only 0.5° [0.3° C.].

After entering Discovery Harbor (Fort Conger) the mean for the following six days rose 3° [1.7° C.] for the surface and 0.5° [0.3° C.] in 33 feet [10m]. The causes which so materially changed the surface sea temperatures in Discovery Harbor from that in the open straits are doubtless the same as prevail in all bays, fiords, or inlets north of Cape York. The broken, precipitous country is never entirely covered with snow, and its deep, narrow valleys near the coast afford quick drainage to the sea. Rapid summer torrents are prevalent wherever snow falls in quantity or the inland ice-cap touches a valley. In consequence enormous quantities of fresh water at the temperature of 32° [0° C.] is poured into and covers the sea. Dr. Moss, R. N., records that water of this temperature covered to a depth of 9 feet [2.7m] the Polar Ocean 500 yards [457m] from the shore at Floeberg Beach.

In summarizing it may be briefly stated that the mean daily temperature of the sea's surface sank from 38.7° [3.7° C.], in 66° N., 55′ W. (just south of Disco Island), to 29.6° [−1.3 C.] in 81° 30′ N., the upper part of Kennedy Channel. As will be seen from the daily means in Table clxxvi, this decrease was gradual and continuous, being interpolated only in the Greenland ports and one day in passing Whale and Murchison Sounds, from which must pour out much warm water.

This opinion finds certain verification in Nare's experience in finding the water at this point abnormally high in July, but at a normal temperature in September. In going from Disco to Kane's Sea our surface temperatures were 1° [0.6° C.] higher than those of the British Expedition, 1875–'76, for July.

The difficulty of comparing one set of sea temperatures with another is obvious. The errors of the instruments are not always carefully determined or applied, and again a difference in the temperature is readily caused by lack of care and proper precautions in making the observation. Again, as the temperature of the sea changes sensibly from month to month, such differences may result from this cause as to lead to appreciable and misleading errors and theories.

It would seem that it would be better to adopt the method of taking temperatures at the uniform depth of 33 feet [10^m], thus obviating the influence of strictly local conditions, such as floating ice, discharging fresh-water streams, &c. As pertinent to this suggestion, it may be mentioned that the range of surface temperatures was twice as great within the Arctic Circle, as at the depth of 33 feet [10^m].

TEMPERATURE OF THE SEA AND MEASUREMENTS OF ICE AT FORT CONGER.

The temperature of the sea was observed tri-monthly the first year and five times each month the second year, on which occasions the thickness of the salt-water ice was also carefully measured (Table CLXXI).

The monthly means are as follows:

TABLE CLXIX.—*Monthly mean temperature of sea water and mean thickness of salt-water ice at Fort Conger, 1881–'83.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Months.	1881.						1883.					
	Surface.	33 feet.	66 feet.	Bottom. Feet.	Bottom. Temperature.	Thickness of ice.	Surface.	33 feet.	66 feet.	Bottom. Feet.	Bottom. Temperature.	Thickness of ice.
	°	°	°		°	*Inches.*	°	°	°		°	*Inches.*
August	------	------	------	------	------	------	31.60	30.97	------	61	30.57	0.00
September*	30.10	30.02	29.45	76	29.75	11.9	29.23	29.23	------	69	29.15	5.38
October†	28.18	28.78	28.70	98.8	29.26	22.3	29.03	29.03	29.10	79	29.03	17.25
November	**27.98**	**28.35**	**28.10**	100.5	**28.15**	28.6	**28.90**	29.03	28.97	106	29.00	29.75
December	28.88	28.74	------	42	**28.20**	31.8	**28.90**	**28.97**	**28.90**	110	**28.90**	39.69
January	28.40	28.70	------	45.4	28.72	36.5	28.97	29.03	29.03	113	29.00	48.19
February	28.63	28.63	------	43	28.63	47.6	28.97	29.07	29.00	113	29.00	53.25
March	28.63	28.47	------	40	28.80	53.9	29.10	29.13	29.10	114	29.10	56.16
April	28.93	28.67	------	46.2	28.73	55.5	29.20	29.27	29.27	119	29.23	57.01
May	28.90	28.90	29.00	60.7	28.90	54.0	29.27	29.30	29.27	113	29.27	56.61
June	29.63	29.70	------	77.7	29.63	47.5	30.05	30.03	30.03	103	30.07	50.50
July	33.33	29.93	------	59.3	29.70	------	31.33	30.70	30.63	81	30.70	32.17

*Omitting 16th. †Omitting temperatures of 21st.

The maximum thickness of the ice was 59.8 inches [1.52^m] May 20, 1882, and 57.8 [1.47^m] May 17, 1883. The ice in 1875–'76 only attained the thickness of 39.25 inches [1^m] April 30, and 38 inches [0.96^m] May 31, with no intermediate measurements.

From the temperature observations it appears that the water at the depth of 33 feet [10^m] and 66 feet [20^m] is, perhaps, 0.1° [0.06° C.] warmer than at the surface

The extreme difficulty of making accurately such observations through the winter months is evident, but, in addition, the breakage of several thermometers and the uncertainty that all the instruments used were strictly comparable complicated the situation. The observations dependent on thermometer No. 320, from January 1, 1882, to July, 1883, are strictly comparable, and the second winter's observations are free from peculiarities which marked the first winter.

The surface temperature of the sea was obtained, however, with great accuracy the second year, there being one observer and one thermometer, the error of which was determined at 32° [0° C.].

TABLE CLXX.—*Mean temperatures of the surface of the sea, Fort Conger, 1882–'83.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Months.	High water.	Low water.	Mean.
1882.	°	°	°
October*	29.20	28.96	29.04
November	29.07	28.97	29.02
December	28.97	28.90	28.94
1883.			
January	29.01	28.94	28.98
February	29.10	29.06	29.08
March	29.21	29.19	29.20
April	29.29	29.27	29.28
May	29.29	29.24	29.26
June†	29.39	29.33	29.36

*Six days. †Eighteen days.

No regular readings were made through the winter of 1875–'76 by the British Arctic Expedition, but the lowest detached readings, 28.2°, were made November 29 and December 24 (no readings between) at Floeberg Beach, 83° 27′ N.

It is evident from these observations that the temperature of the water follows the movement of the sun, as Sherman's observations show to be the case at Ananito, Cumberland Gulf. At Jan Mayen there seems to be the same tendency, as the mean temperature of the sea in March, the coldest month, is but 0.054° [0.03° C.] below that of December. At Point Barrow, although the movement of the sun and the lowest temperature of the air unite to bring about the sea minimum in December, yet it fell in January. It should be remarked, however, that the observations were for eleven days only in December. Along the Atlantic coast, from Florida to New Jersey, the temperature of the water follows that of the air, but along the New England coast the temperature of the sea lags behind that of the air a month.

A series of observations of the temperature of the high and low water at Fort Conger (Table CLXX) resulted from an examination of the surface temperatures in Kennedy Channel, August, 1881, when the flowing tide (from the north) was noticed to be slightly warmer than the ebbing tide (from the south).

Sergeant Rice, who made the series, was a very intelligent and careful observer, but was imbued, as he afterwards admitted, with the opinion that the temperatures should be the same at all times and was only convinced to the contrary by careful and continued observations.

The thermometer, in a regular water-case, was regularly suspended for about five minutes 3 feet [0.91^m] below the surface at both high and low water.

The difference of 0.1° [0.06° C.] is small, but it may indicate a slightly higher temperature (perhaps 1° [0.56° C.]) to the extensive Polar Sea than to the narrow straits which form the northern part of the West Greenland Channel.

The observations of H. M. S. *Alert*, off Cape Union, at the entrance to the Polar Sea, August 1 and 2, 1876, 4 readings, give a temperature of 30.5° [−0.8° C.], while at Cape Beechey, August 3–10, 8 readings, show 29.06° [−1.6° C.], with 29.5° [−1.4° C.] the maximum. No mean as high as that at Cape Union was recorded by the *Alert* on her voyage southward until Buchanan Strait, 4.5° lower latitude, was reached.

The annual mean temperature of sea water at Fort Conger may be placed at 29.6° [−1.3° C.] for the surface and 29.3° [−1.5° C.] at the depth of 33 feet [10^m].

At no time does the mean temperature at 33 feet [10^m] reach the melting point of fresh-water ice, and at the surface in July only.

These means show conditions in the Polar Ocean under which fresh-water ice can melt only by the action of the sun on such portions as are above the surface of the water.

TABLE CLXXI.—*Sea temperatures and ice measurements at Fort Conger, 1881-'82.*

$\phi = +81° 44'$ $\lambda = -64° 45' = -4^h 19^m$

Dates.	Number of thermometer used.	Sea temperatures (corrected). Surface.	33 feet.	66 feet.	Various depths. Feet.	Various depths. Temperature.	Thickness of ice.	Remarks.
1881.		°	°	°		°	*Inches.*	
Sept. 1	52	-----	-----	-----	-----	-----	4.38	
Sept. 6	52	31.6	29.9	-----	42	30.0	-----	
Sept. 11	52	30.5	30.4	-----	72	29.8	9.00	
Sept. 16	52	30.5	-----	-----	96	29.5	-----	
Sept. 22	52	29.0	29.6	29.2	-----	-----	15.5	30.1° at 16 fathoms.
Sept. 26	52	29.3	30.2	29.7	94	29.7	15.5	
Oct. 1	52	27.8	29.0	29.2	92	29.3	15.0	Ice measured in new place.
Oct. 6	52	28.8	29.1	29.0	96	30.1	22.0	
Oct. 11	31	29.6	29.7	29.1	100	29.4	21.5	
Oct. 16	31	27.3	27.7	27.9	107	28.6	{ 19.5 { 21.3	On 16th. On 17th in new place.
Oct. 21	31	27.9	24.9	25.9	104	27.9	25.75	
Oct. 26	31	27.4	28.4	28.3	99	28.9	26.0	
Nov. 1	31	27.0	28.2	28.3	99	28.1	27.0	
Nov. 6	31	28.9	28.3	27.9	102	28.2	27.125	
Nov. 11	31	27.4	27.9	28.1	-----	-----	27.0	
Nov. 26	325	28.6	29.0	-----	-----	-----	29.0	Temperatures on these dates as read off. Error unknown.
Dec. 1	325	29.1	29.2	-----	-----	-----	33.0	
Dec. 12	325	29.4	29.3	-----	-----	-----	31.0	
Dec. 16	325	28.9	28.7	-----	-----	-----	32.5	
Dec. 21	320	28.4	28.2	-----	42	28.2	28.5	
Dec. 27	320	28.6	28.3	-----	-----	-----	32.0	
1882.								
Jan. 1	320	28.5	28.6	-----	-----	-----	34.0	
Jan. 6	320	27.5	29.0	-----	40	29.0	36.0	
Jan. 11	320	28.6	28.7	-----	40	28.7	33.0	
Jan. 17	320	28.5	28.7	-----	40	28.7	34.0	
Jan. 21	320	28.6	28.7	-----	59	28.7	44.0	
Jan. 26	320	28.7	28.5	-----	48	28.5	34.0	Ice probably measured in same hole as previous date, January 21.
Feb. 1	320	28.7	28.7	-----	48	28.7	40.0	
Feb. 11	320	28.5	28.5	-----	39	28.5	44.5	
Feb. 21	320	28.7	28.7	-----	42	28.7	52.5	
Mar. 1	320	28.5	28.3	-----	37	28.5	53.5	Measurement made in new place; old hole not frozen up; covered with ice 47.1 inches.
Mar. 11	320	28.7	28.4	-----	42	28.9	54.5	
Mar. 22	320	28.7	28.7	-----	-----	29.0	52.0	
Apr. 1	320	28.8	28.8	-----	46.5	28.9	55.5	
Apr. 11	320	28.7	28.7	-----	47	28.8	53.5	
Apr. 21	320	29.3	28.5	-----	45	28.5	59.0	
May 2	320	28.8	28.9	-----	48	28.9	54.0	
May 11	320	28.9	28.9	-----	49	28.7	50.3	
May 21	320	29.0	28.9	29.0	85	29.1	59.75	Measured in new place 20 yards farther from shore.
June 2	320	29.0	29.1	-----	72	29.1	52.0	Measured in new place 20 yards farther from shore.
June 11	320	30.0	30.0	-----	78	30.0	57.0	
June 21	320	29.9	30.0	-----	83	29.8	52.0	
July 1	320	32.5	29.9	-----	58	29.5	29.0	
July 11	320	34.0	29.7	-----	78	29.4	-----	Ice broke up July 9.
July 21	320	33.5	30.2	-----	42	30.2	-----	

TABLE CLXXI.—*Sea temperatures and ice measurements at Fort Conger*, 1882–'83—Continued.

Dates.	Number of thermometer used.	Sea temperatures (corrected).						Thickness of ice.	Remarks.
		Surface.	33 feet.	66 feet.	99 feet.	Various depths.			
						Feet.	Temperature.		
1882.		°	°	°	°		°	*Inches.*	
Aug. 3	*320	31.3	30.4	......	......	45	29.8	......	
Aug. 12	320	31.7	31.4	......	......	95	31.2	......	
Aug. 21	320	31.8	31.1	......	......	43	30.7	......	
Sept. 1	320	29.3	29.3	......	......	60	29.2	......	No new ice in harbor.
Sept. 11	320	29.3	29.3	......	......	......	......	3.0	
Sept. 21	320	29.1	29.1	......	......	78	29.1	7.0	
Oct. 2	320	29.1	29.1	......	......	60	29.1	11.5	
Oct. 11	320	29.1	29.1	29.1	......	92	29.1	17.0	
Oct. 21	320	28.9	28.9	......	......	86	28.9	19.0	
Nov. 1	320	29.0	29.1	29.0	......	104	29.0	23.5	
Nov. 11	320	28.8	29.0	29.0	......	108	29.0	29.0	
Nov. 21	320	28.9	29.0	28.9	29.0	105	29.0	31.0	
Dec. 1	320	28.8	28.9	28.8	28.8	108	28.8	35.5	
Dec. 11	320	29.0	29.0	29.0	29.0	112	28.9	38.0	
Dec. 21	320	28.9	29.0	28.9	28.9	110	29.0	41.75	
1883.									
Jan. 1	320	28.9	29.0	29.0	29.0	110	29.0	43.5	
Jan. 11	320	29.0	29.1	29.0	29.0	114	29.0	46.0	
Jan. 21	320	29.0	29.0	29.1	29.0	114	29.0	51.0	
Feb. 1	320	29.0	29.1	29.0	29.1	110	29.0	52.25	
Feb. 11	320	28.9	29.0	29.0	29.0	114	29.0	53.0	
Feb. 21	320	29.0	29.1	29.0	29.0	115	29.0	53.0	
Mar. 1	320	29.0	29.0	29.0	29.0	114	29.0	54.75	
Mar. 11	320	29.1	29.2	29.1	29.2	115	29.1	56.33	
Mar. 21	320	29.2	29.2	29.2	28.1	114	29.2	57.33	
Apr. 1	320	29.2	29.3	29.2	29.2	115	29.2	56.25	
Apr. 11	320	29.2	29.2	29.3	29.3	121	29.3	56.7	
Apr. 21	320	29.2	29.3	29.3	29.2	120	29.2	57.33	
May 1	320	29.2	29.3	29.2	29.2	110	29.2	57.75	Thickness of ice in Lake Alexandra, 79.8 inches.
May 11	320	29.2	29.3	29.3	29.3	117	29.3	57.0	
May 21	320	29.4	29.3	29.3	......	112	29.3	56.3	
June 1	320	29.3	29.3	29.3	......	117	29.3	55.4	
June 11	320	29.4	29.3	29.3	......	112	29.4	55.0	
June 21	320	{31.4 31.5}	31.5	31.5	......	81	31.5	51.8	
July 1	320	31.3	29.7	29.7	......	81	31.0	39.8	Evidently unreliable; probably affected by surface water.
July 11	320	31.3	31.3	31.1	......	81	30.0	36.0	
July 21	320	31.4	31.1	31.1	......	81	31.1	20.7	

* Thermometer inclosed in Signal Service case.

TABLE CLXXII.—*Temperature of surface sea water at high and low water, Fort Conger, 1882–'83.*

$\phi = +81^\circ 44'$ $\lambda = -64^\circ 45' = -4^h 19^m$

Date.	October, 1882.		November, 1882.		December, 1882.		January, 1883.		February, 1883.		March, 1883.		April, 1883.		May, 1883.		June, 1883.	
	High.	Low.	High.	Low.	High.	Low.	High.	Low.	High.	Low.	High.	Low.	High.	Low.	High.	Low.	High.	Low.
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°
1	-----	-----	29.1	29.0	28.9	28.9	28.9	28.9	29.1	29.1	29.1	29.1	29.3	29.3	29.3	29.2	29.3	29.2
	-----	-----	.2	.2	.9	.9	29.0	.9	.1	.0	.1	.1	.3	.3	.3	-----	.3	.3
2	-----	-----	.3	.1	29.0	.9	28.9	.9	.1	.1	.1	.1	.3	.3	.3	.2	.4	.3
	-----	-----	.1	.0	28.9	.9	.9	.9	.1	-----	.1	.1	.3	-----	.2	.2	.4	.5
3	-----	-----	.2	.0	.9	.8	.9	.8	.1	.1	.1	.1	.3	.3	.3	.2	.4	.3
	-----	-----	.1	.0	.9	.8	29.0	-----	.1	.1	.1	.1	.3	.3	.3	.1	.3	.3
4	-----	-----	.1	.0	29.0	.8	.0	.9	.1	.1	.1	.1	.3	.3	.2	.1	†.6	†.7
	-----	-----	.2	-----	.0	-----	.1	29.0	.1	.1	.1	-----	.3	.3	.3	.2	.3	†30.1
5	-----	-----	.2	.0	.0	.9	.0	.0	.1	.1	.1	.1	.3	.3	.3	.2	.3	†29.8
	-----	-----	.1	.1	.0	29.0	.0	.0	.1	.1	.1	.1	.3	.3	.3	.2	.2	†30.1
6	-----	-----	.2	.0	28.9	.0	.0	.0	.1	.1	.1	.1	.2	.3	.3	.3	.3	29.2
	-----	-----	.2	.1	29.0	28.9	.0	.0	.1	.1	.1	.1	.3	.2	.3	.1	-----	.2
7	-----	-----	.2	.1	28.9	.8	.0	.0	.1	.1	.1	.1	.3	.3	(*)	.2	.3	.3
	-----	-----	.1	28.9	.9	.8	.0	28.9	.1	.0	.1	.1	.3	.3	(*)	(*)	.3	.1
8	-----	-----	.1	29.0	29.0	.8	.0	.9	.1	.1	.1	.1	.3	.3	(*)	(*)	.2	.3
	-----	-----	.1	.0	28.9	.9	.0	.9	.1	.0	.2	.1	.3	.3	-----	.1	.2	.2
9	-----	-----	.1	28.9	29.0	.8	.1	.9	.1	.0	.2	.1	.3	.3	.3	.2	.4	†.6
	-----	-----	.0	.9	.0	.9	.0	.9	-----	.0	.2	.1	-----	.3	.3	.2	†.9	†.6
10	-----	-----	28.9	.8	.0	.9	28.9	.8	.1	.0	.2	.1	.3	.3	.3	.2	.4	.2
	-----	-----	29.1	.9	28.9	.8	-----	.8	.1	.0	-----	.1	.3	.3	.3	.2	.3	.3
11	-----	-----	.0	.9	29.0	.8	.9	.8	.1	.0	.1	.1	.3	.3	.3	.2	.4	.3
	-----	-----	.0	.8	28.9	.9	29.0	.9	.1	.0	.2	.2	.3	.3	.3	.1	.4	.4
12	-----	-----	.0	.8	.9	.8	.0	.9	.1	.0	.2	.2	.3	.3	.3	.2	.4	.4
	-----	-----	.1	.9	-----	.9	.0	.9	.1	.0	.2	.2	.3	.3	.2	.1	.5	.4
13	-----	-----	.0	.9	.9	.9	.0	.8	.1	.0	.2	.2	.3	.3	.3	.1	.5	.5
	-----	-----	-----	29.0	.9	.8	.0	.9	.1	.1	.2	.2	.3	.3	.2	.1	.5	.5
14	-----	-----	.1	.0	.9	.8	28.9	.9	.1	.1	.2	.2	.3	.0	.3	.1	.4	.5
	-----	-----	.1	.0	.9	.9	29.0	.9	.1	.0	.2	.2	.3	.3	.2	.1	.5	-----
15	-----	-----	.0	.0	.9	.9	.0	29.0	.1	.1	.2	.2	.3	.2	.3	.1	.5	.4
	-----	-----	.0	.0	.9	.8	.0	28.9	.1	.1	.2	.2	.3	.3	.2	-----	†.6	.4
16	-----	-----	.0	.0	.9	.8	28.9	.9	.1	.0	.2	.2	.3	.2	.4	.2	†.6	†.5
	-----	-----	.1	28.9	29.0	.9	.9	.9	.1	-----	.2	.2	.3	-----	.4	.2	†30.0	†.7
17	-----	-----	.1	29.0	.0	.9	.9	.9	.1	.0	.2	.2	.2	.2	.3	.2	†29.8	†.8
	-----	-----	.1	.1	28.9	.8	29.0	.9	.1	.1	.2	.2	.2	.2	.2	.3	†.7	†.8
18	-----	-----	.0	.0	.9	.9	.0	.9	.1	.1	.3	.2	.2	.2	.3	.2	†.6	†.7
	-----	-----	.1	.0	29.0	.9	28.9	-----	.1	.1	.3	-----	.2	.3	.3	.2	†30.0	†.8
19	-----	-----	.1	.0	.0	29.0	.9	.8	.1	.0	.2	.2	.3	.2	.3	.2	Observations discontinued June 19, 1883, on account of large amount fresh water running into bay.	-----
	-----	-----	.0	-----	.1	-----	29.0	.9	.1	.1	.2	.2	.2	.2	.3	.2		-----
20	-----	-----	.1	.0	.1	.0	.0	.9	.1	.0	.2	.2	.2	.2	.4	.3		-----
	-----	-----	.1	.1	.0	.0	.0	29.0	.1	.1	.2	.2	.3	.2	.3	.3		-----
21	-----	-----	.0	28.9	.0	28.9	.0	.0	.1	.1	.3	.2	.3	.2	.3	.2		-----
	-----	-----	.1	29.0	.0	29.0	.0	28.9	.1	.1	.3	.2	.3	.2	.3	.2		-----
22	-----	-----	.1	.0	.0	28.9	.1	.9	.1	.1	.3	.3	.3	.3	.3	.4		-----
	-----	-----	.0	.0	.0	29.0	.0	29.0	.1	.1	.3	.2	.3	.3	.2	.3		-----
23	-----	-----	.0	.0	.0	28.9	.1	.0	.1	.0	.3	.2	.3	.2	.3	.3		-----
	-----	-----	.0	.0	28.9	.9	.0	.0	-----	.1	.3	.3	.3	.2	.3	.3		-----
24	-----	-----	.0	28.9	29.1	.9	.1	.0	.1	.1	.2	.3	.3	.3	.3	.3		-----
	-----	-----	.0	29.0	.0	29.0	-----	.1	.1	.1	.2	.2	-----	.2	-----	.5		-----
25	-----	-----	.1	.0	.1	.0	.1	.0	.1	.1	.3	.2	.3	.3	.3	.4		-----
	-----	-----	.1	28.9	.1	.0	.1	28.9	.1	.1	-----	.2	.3	.3	.3	.4		-----
26	29.3	28.9	.0	29.0	.1	.1	.0	29.0	.1	.1	.3	.3	.3	.3	.3	.3		-----
	29.2	29.0	.0	28.9	-----	.0	.1	.0	.1	.1	.3	.3	.3	.3	.3	.4		-----
27	29.2	29.0	.0	29.0	.1	28.9	.1	.0	.1	.1	.3	.3	.3	.3	.3	.3		-----
	29.2	28.9	-----	28.9	.0	29.0	.0	.0	.1	.1	.3	.3	.3	.3	.3	.3		-----
28	29.1	28.9	.0	29.0	.0	.0	.1	.0	.1	.1	.3	.2	.3	.3	.2	.3		-----
	-----	29.0	.0	.0	.1	.0	.1	.0	.1	.1	.3	.3	.3	.3	.3	.3		-----
29	29.1	28.9	.0	28.9	.0	28.9	.1	.1	-----	-----	.3	.3	.3	.3	.3	.3		-----
	29.3	29.0	.0	.9	.0	.8	.1	.0	-----	-----	.3	.3	.3	.3	.3	(*)		-----
30	29.2	29.0	28.9	.8	.0	.8	.1	.1	-----	-----	.3	.3	.3	.3	(*)	.3		-----
	29.2	28.9	28.9	.9	28.9	.9	.1	.1	-----	-----	.3	.3	.3	.3	.3	.4		-----
31	29.2	29.0	-----	-----	.9	.9	.1	.1	-----	-----	.3	.3	-----	-----	.4	.4		-----
	29.2	29.0	-----	-----	.9	.9	.1	.1	-----	-----	.3	.3	-----	-----	.2	-----		-----

* Observations missed.
† Probably affected by influx of running water into bay.
No. 320 (water) used to include October 31; correction applied $-0^\circ.5$.
No. 764 (exposed) used from November 1; correction applied $-0^\circ.2$.

AURORAL OBSERVATIONS.

The aurora was regularly looked for at each hour of observation, and any display from +03 minutes to +18 minutes could hardly have escaped observation.

The continual presence of the sun from April 12 to September 1 prevented any displays from being visible for that period. Cloudy weather prevailed to a considerable extent at other seasons. Table CLXXIII exhibits however the relative frequency of the aurora during hours at which a display could have been seen.

In general, it may be said that auroras at Fort Conger were colorless and quiescent, and that magnetic disturbances were not generally coincident with auroras of this class. At times disturbances followed the disappearance of the display.

Again, colored auroras and those of rapid changes of form and position seemed to be more frequently contemporaneous with magnetic disturbances. Displays were most frequently seen in the magnetic meridian, and such were of longer continuance than those which were seen in the true north or in other quarters of the heavens.

TABLE CLXXIII.—*Hours during which aurora could possibly have been seen and hours during which it was seen.*

Months.	1881–'82.		1882–'83.	
	Possible.	Seen.	Possible.	Seen.
September	27	2	31	0
October	383	19	307	25
November	540	21	630	94
December	456	29	590	72
January	554	19	544	54
February	508	9	484	14
March	109	0	144	0
Total	2,577	99	2,730	259
Percentage		3.8		9.5

The aurora gave appreciable light and in one instance cast my shadow. Even the most imaginative of the party never heard any noise to ascribe to this phenomenon, although all were asked to carefully listen and report any such noise.

An attempt was once made to photograph the aurora, but it failed from lack of proper facilities, if for no other cause. As photographs were obtained seventeen days after the absence of the sun for the winter, and at temperatures far below zero Fahrenheit [−17.8° C.], there seems no good reason, however, to think the apparatus was defective.

The paucity of auroral displays was anticipated by me, though surprise has been manifested at the small number. In the following descriptions the directions refer to true points of the compass, and the elevations are all estimated:

RECORD OF AURORAS.

July 3, 1881 (from 11.45 p. m. to 12 midnight).—A very bright aurora was observed at 11.45 p. m., extending from * * * It shot up a few streamers and continued until after midnight.

July 4, 1881 (from 12 midnight to 12.10 a. m.).—At 12.10 a. m. the aurora had entirely disappeared. The color was of pale yellow, and the outlines of the arch were very distinct. The moon was shining very brightly during the entire display.

September 21, 1881 (from 9.40 p. m. to 10.30 p. m.).—An aurora noticed at 9.40 p. m., extending from the horizon (azimuth 170°) to a height of about 90°, gently undulating and flashing to a bright light at variable intervals, from a few seconds to one-fourth of a minute, obscured by clouds at 10.30 p. m.

October 16, 1881 (from 7 p. m. to 7.20 p. m.).—An aurora observed between 7 and 7.20 p. m. extending about 15° above the horizon. Faint flashes of whitish light reaching the zenith at times from N. 90° to 270° E. No part of heavens particularly covered. No magnetic disturbance. ***

* * * * * * * * * * *

October 19, 1881 (from 9.03 p. m. to 9.21 p. m.).—At 9.03 p. m. an auroral arch was observed extending from N. to N. 110° E., reaching nearly to the zenith. It was of a whitish color and continued to 9.15 p. m. It reappeared at 9.17 p. m. and extended to the zenith, disappearing at 9.21 p. m.

*** Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

Display generally colorless beams, although curtain formation was first seen at 9.15 p. m. Long slender flashes rose to the zenith from various points between N. 135° E. and N. 315° E. It faded instantly on appearing. At 9.18 p. m. two bands of colorless light 5° wide rose from N. 135° E. and N. 315° E., and met in the zenith. This band from horizon to horizon increased in brightness for two or three minutes and slowly vanished.

October 22, 1881 (from 6 p. m. to 6.25 p. m.).—At 6 p. m. an auroral arch well defined, white in color and about 2° in width, was observed extending from eastern to western horizon. The center of the arch passed through the ***, Alpha Boötis and Jupiter. At 6.15 p. m. the outlines were not as well defined, the center of the arch breaking up and spreading toward the zenith, disappearing at 6.25 p. m., except an undefined nebular appearance near the zenith. At 6.10 p. m. a streamer shot up from the north toward the center of the arch. Observations of the magnetometer during the display showed a slight magnetic disturbance.

October 25, 1881 (from 5.55 p. m. to 6.05 p. m.).—An auroral streamer, N. 10° E. about 2° in width, white in color, passing through the Pleiades, and reaching to the zenith appeared at 5.55 p. m. lasting until 6.02 p. m., when it began to fade, entirely disappearing at 6.05 p. m.

October 26, 1881 (from 12.02 a. m. to 4.10 a. m.).—At 12.02 a. m. an auroral arch, white in color, appeared extending from the eastern to the western horizon, reaching to within 4° of the zenith and about 6° in width; disappeared at 12.07 a. m.

Aurora reappeared at 12.30 a. m. in the form of an arch, extending north and south, the center of which was about 15° above the eastern horizon. Near the south end of arch faint streamers were visible. At 12.55 a. m. streamers appeared in the west and southwest. At 1.25 a. m. the arch had disappeared, but a burning glow remained on the south and southwest horizon. At 2 a. m. a streamer shot up about 5° from the NW. horizon, while a luminous glow extended from the southwest nearly to the zenith. All disappeared at 2.17 a. m. At 3 a. m. an arch reappeared, extending from N. 135° E. to N.; the light being very diffuse and reaching but a short distance from the horizon, except on the south, where well-defined streamers rose to about 15°, and in the west, where the same phenomena were observed. The streamers, at 3.15 a. m., disappeared, and the aurora was scarcely visible until 3.30 a. m., when a very low arch formed in the south, the center rising only 10° from the horizon, while the ends were simply intervening hills. At 3.40 a. m this arch rose to within 15° of the zenith with sharp and well-defined outlines and about 3° in width. The extremities of the arch were N. 120° E. to N. 215° E., while on the horizon there was a faint light. At 3.45 a. m. this arch entirely disappeared; at 3.50 a. m. it resumed the curtain formation in the south, which extended along and about 5° above the horizon, the extremities being hidden by the intervening hills. It was about 3° degrees in width; at the same time two columns rose from the western horizon, the larger rising 25°, and a slight reddish color was noticed, the only deep color heretofore noticed in the aurora, it being a pale yellow. At 4 a. m. it was very bright near the southern horizon, but of no distinctive formation and very faint in the east, entirely disappearing at 4.10 a. m.

October 28, 1881 (from 8 p. m. to 8.25 p. m.).—An aurora appeared at 8 p. m. extending in the form of a white column from N. 240 E. to within 10° of the zenith. The line of light was continued from about the same distance east of the zenith, terminating in a brilliant column near Jupiter about 3° in width, while below, as far as N. 90° E., faint columns were visible, arising but a few degrees above the horizon. At 8.15 p. m. the display was transferred to the southern horizon in the shape of a column rising from the center, passing through to the constellation of Taurus and reaching to within about 15° of the zenith. It appeared to have originated from a common center, but the column, if any, was hid by intervening hills; one ray shot up so as to nearly reach the zenith; another rose from a little north of Pleiades to within 45° of zenith, and was remarkably bright. Disappeared at 8.25 p. m.

October 29, 1881 (from 9 p. m. to 10.10 p. m.).—At 9 p. m. an auroral streamer was observed about 10° E. of S., disappearing in a few minutes. At 9.03 p. m. a streamer about 2° in width shot up from the south, passing through the Pleiades and reaching to the northern horizon, while in the east and northeast numerous faint streamers were observed extending from 15° above the horizon. The auroral arch disappeared at 9.15 p. m. Another one, 10° in width, well defined, with a slight reddish tint, appeared extending from the northern to the western horizon, and passing through Saturn and Arcturus. At 9.30 p. m. another one not so well defined, about 2° in width, extending from the same point on the horizon, appeared. Also faint streamers in the north, lasting but a few minutes. At 10 p. m. the streamers in the E. and NE. disappeared; at 10.05 p. m. the two arches already began to fade, and disappeared at 10.10 p. m. No magnetic disturbance observed.

October 30, 1881 (from 9 p. m. to 9.25 p. m.).—An aurora appeared at 9 p. m. in form of an arch, extending from N. to S., and was about 2° in width. At 9.05 p. m. a second arch appeared, about 15° below the first one. This second arch was about 5° in width. Both the arches were white in color. The display disappeared at 9.25 p. m. No magnetic disturbance noticed.

November 10, 1881 (from 12.01 a. m. to 5.15 p. m.).—At 12.01 a. m. an aurora was observed extending from about 15° above the north horizon to about 5° south of the zenith; color, white. Disappeared at 12.05 a. m. At 5.05 p. m. a faint auroral streamer was absberved in western horizon, disappearing at 5.15 p. m.

*** Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

November 14, 1881 (from 12.17 p. m. to 11 p. m.).—A faint auroral streamer 20° east, extending to 20° beyond the zenith, white in color and about 1° in width, appeared at 12.17 p. m., lasting until 12.27 p. m., when it entirely faded away, reappearing at 12.28 p. m. 18° E. of N. and passing through Jupiter, reaching to within 20° of the zenith, disappearing at 12.34 p. m. A streamer, about 5° in width, shot up about 45° E. of N., of a very reddish color, and extending about 15° above the horizon, when the column was apparently broken by the upper movements of the air, the column rising to the northward. In a few minutes the column contracted to about 1° in width, and leaving its reddish color, taking that of white, extended in a direct line to the SW. horizon about 15° S. of W. At 3.05 p. m. the column lost its compact form and began breaking up in detached portions, assuming a ribbon form perpendicular to the horizon and near the zenith, spreading out to about 5° in width, the ribbons having a waving motion from E. to W., the entire arch moving slowly to the southward, slowly fading away, entirely disappearing at 4.05 p. m. Reappearing again at 4.15 p. m. in the form of an arch, extending from 135° E. of N. to about 20° E.; the center of arch being about 1° in width, disappearing at 4.30 p. m. At 10 p. m. an arch extending from N. to 18° E. appeared, having a ribbon formation. The center of arch about 10° from zenith, about 4° in width and yellow in color. At 10.30 p. m. the arch had moved to the west, passing through the Pleiades and embracing in its path Polaris, disappearing at 11 p. m.

November 20, 1881 (9.30 a. m.).—An auroral streamer was reported to have been seen by Doctor Pavy in the NE. at 9.30 a. m. No magnetic disturbance.

November 23, 1881 (from 9 a. m. to 9.10 a. m.).—At 9 a. m. an aurora appeared, extending from 30° above the north horizon to the same altitude above N. 18° E., passing through the zenith. It was the ribbon formation; color, white. Disappeared entirely at 9.10 a. m.

November 24, 1881 (5.40 p. m. to 9.30 p. m.).—Three auroral streamers appeared at 5.40 p. m., rising from horizon at N. 22° E. about 15°. At 7.18 they reappeared, extending to within about 15° of the zenith from points on the horizon between N. 45° E. and N. 315° E.; color, white. At 7.23 p. m. it assumed the arch formation, extending from N. 315° E. to N. 135° E., slowly fading and disappearing at 7.33 p. m.; reappearing in the SE. as a streamer, in width 2°, at 8.25 p. m.; disappearing at 8.37 p. m. The aurora reappeared again at 8.50 p. m. in SE. and NW., as faint ribbon streamers, about 15° above the horizon, 2° in width and 15° in length, concentrating into an arch extending from N. 315° E. to N. 135° E., 1° in width, slowly fading at 9.15 p. m., and entirely disappearing at 9.30 p. m. Heavy magnetic disturbance.

November 25, 1881 (from 6.45 a. m. to 9.55 a. m.).—An auroral arch, reaching from N. to N. 122° E., appeared at 6.45 a. m.; center of arch about 10° above horizon and of the curtain formation, about 5° in width and white in color, disappearing entirely at 7.10 a. m. At 9.40 a. m. an auroral arch was observed from N. 30° E. to N. 130° E., about 15° in height at center. At its northern end it was very bright. In color, pale yellow. Above the arch was observed a dark cloud. The display disappeared at 9.55 a. m.

November 27, 1881 (from 10 a. m. to 10.05 a. m.).—An auroral streamer was observed 3° 55′ E. of N., about 5° in width, reaching to the zenith; color, white. Appearing at 10 a. m. and disappearing at 10.05 a. m.

November 28, 1881 (from 3.13 a. m. to 12.50 p. m.).—A faint auroral light, about 5° in width, parallel to the horizon, appeared at 3.13 a. m., extending from N. 16° E. to N. 18° E.; color, white. At intervals of time shooting up toward the zenith columns of light to within 6° of zenith, gradually rising toward the north, when it reached a point 13° 3′ E. disappeared entirely, at 3.30 a. m. At 11.20 a. m. another one appeared. This was very bright. A portion of the arch extended from the Pointers to Mars, passing in a N. and S. line about 8° west of zenith, about 13° wide, and disappeared after about a minute. This display was followed by numerous streamers, shooting up from the SW. and disappearing rapidly. This continued for about seven minutes. The aurora reappeared in the form of an arch at 12 m., extending from N. 45° E. along the zenith to N. 225° E.; was very bright, color being white. The arch was very much broken, being near the zenith about 5° in width, which decreased in places to 2°. The part of another arch formed, extending nearly parallel to the eastern end of the first, forming a junction with it near the zenith. At 12.35 p. m. it assumed the curtain formation nearly its entire length. At 12.40 p. m. the western end of the arch disappeared, while the streamers sprang up from the entire northeastern portion of the sky, some of them rising to the zenith. At 12.50 p. m. the display ended. No magnetic disturbance.

December 5, 1881 (from 11.23 p. m. to 11.30 p. m.).—At 11.23 p. m. an auroral streamer, reaching from N. and E. to the zenith and about 2° in width, was observed, disappearing at 11.30 p. m.

December 11, 1881 (from 1.55 p. m. to 6.40 p. m.).—An auroral arch, very bright, formed at 1.55 p. m., extending from N. 5° E. to N. 220° E., center of arch being about 15° above the horizon; curtain formation; color, nearly white. A few streamers shot up to the zenith from the SSW. At 2.15 p. m. another arch formed about 60° above the first, while the SW. sky was filled with streamers extending nearly to the zenith. At 2.25 p. m. a third arch formed. At times the other two and the entire western sky seemed ablaze with auroral streamers. At 2.35 p. m. the brightest arch yet observed at this station passed

from N. 225° E., through the zenith, to N. 22° E., the western portion being composed of streamers of great brilliancy, of an intense white light, extending to the magnetic north pole. At 2.50 p. m. the arch began to fade away, and at 3 p. m. it had broken up and disappeared, while a few streamers remained in the northern sky until 6.40 p. m., when they all disappeared. No magnetic disturbance.

December 14, 1881 (from 8.45 p. m. to 9 p. m.).—At 8.45 p. m. an aurora appeared in the form of a partially formed arch, extending from N. 90° E. to about 60° above the north horizon; of the curtain formation; color, white; disappearing suddenly at 8.35 p. m. At 9 p. m. a streak of light shot up from the horizon about N. 45° E. to a distance of 15°, disappearing immediately.

December 17, 1881 (from 8.54 p. m. to 11 p. m.).—An auroral streamer, first observed at 8.54 p. m., appeared at 10° E. of N., extending to the horizon 25° E. of N., about 2° in width, at times in detached portions, ending at 11 p. m. During the display a few faint streamers were observed in E. and NE. No magnetic disturbance.

December 19, 1881 (from 6 a. m. to 9 p. m.).—A fine display of aurora. It extended like a pillar of fire from horizon to horizon, and, what is infrequent, had at times a decidedly rosy tint, and again was of a pale green color. Aurora appeared at 6 a. m. in the form of an arch extending from N. 45 E. to N. 315° E.; center of arch about 10° above the horizon and consisted of streamers extending towards the horizon; color white, and disappearing at 6.30 a. m. At 7 a. m. numerous auroral streamers appeared in the southwest and southeast, extending about 15° above the summit of the hills towards the zenith, disappearing at 7.55 a. m. At 1.30 p. m. an auroral arch appeared, extending from horizon 80° E. of N. to horizon W. of N. 30°; center of arch about 15° above northern horizon towards the zenith and about 5° in width, very intense white color, with a slight shade of green near the eastern portion of the arch. From the top of the arch numerous narrow streamers observed, extending to within 45° of the zenith. At 1.50 p. m. arch began breaking up by assuming an irregular form as though blown about by disturbed currents of air, moving towards the west and remaining there in the form of streamers about 20° in width. At 2.15 p. m. a new arch formed, extending from N. to W. of 90° N., with several streamers extending up towards the zenith. In the first arch a roseate tint was observed near the northeastern portion of the arch. At 2.30 p. m. the northern end of the arch entirely disappeared, and the rest of it slowly fading towards the western portion of the arch, where a few faint streamers were visible, reaching about 45° above the horizon, disappearing at 2.35 p. m. At 7 p. m. a very faint streamer was observed in the northwest. At 9 p. m. a faint streamer was observed in the southeast. During the day between 11.23 and 11.26 a. m. two auroral streamers of light were observed by Lieutenant Kislingbury from Dutch Island, about 2 miles distant from station. It was of the fan formation and was narrower at the base than at the top. At 11.55 a. m. three streamers of white light were observed by Lieutenant Greely in the W. and NW., extending from 40° to 60° above summit of surrounding hills. Disappearing at 12.05 p. m.

December 20, 1881 (from 12.01 a. m. to 2.20 a. m.).—At 12.01 a. m. a faint streamer was observed 25° E. of N., of a white color, reaching to the zenith, lasting until 2.20 a. m.; also occasional faint patches of white light near the zenith observed.

January 10, 1882 (from 6.50 p. m. to 8.40 p. m.).—Color white and quite bright. At 8 p. m. the arch became complete and moving farther to the south, and this portion appeared as if it were supported by two upright pillars reaching about 30° above the horizon, the intervening space looking as though it was carried to and fro by the wind. At 8.12 p. m. it was fading away, entirely disappearing at 8.25 p. m. But another of less brilliancy formed, extending from N. 100° E. to N. 225° E., disappearing at 8.40 p. m.

January 11, 1882 (from 9. p. m. to 9.15 p. m.).—At 9 p. m. an aurora was observed. It appeared in form of streamers, shooting about 20° above the horizon. They extended from N. 300° E. to N. 185° E. Color white, but not bright. Disappeared at 9.15 p. m.

January 19, 1882 (from 7.35 a. m. to 10.30 a. m.).—An auroral arch observed at 7.35 a. m. Magnetic prime vertical and passing through Castor and Pollux, 1° west of Polaris, and through Altair. Strong magnetic disturbance, the magnet swinging off the scale. The aurora disappeared at 8.30 a. m. Another brilliant arch shot through the zenith from west to south, disappearing in a few moments.

January 21, 1882 (from 12.05 a. m. to 9.40 p. m.).—An aurora of curtain formation appeared at 12.05 a. m., 260° W. of N., altitude 20°; color, white. The arch, gradually rising, attained by 12.20 a. m. an elevation of about 30°. Its position remained unchanged, although part of the arch, especially toward the north, alternately faded and reappeared until 12.40 a. m., when three flames shot up from 200° to 240° E. of N.; altitude from 20° to 30°. At 1 a. m. the arch had faded, but irregular patches about 5° wide and of 15° altitude remained, extending about 200° E. of N. At 1.05 a. m. the patches assumed the shape of a fan and began to fade, and almost entirely disappeared. At 1.40 a. m. the arch was again formed, accompanied with two very bright streamers from 250° E. of N. At 2 a. m., after assuming several different forms, the streamers disappeared. At 2.40 a. m. the arch became faint, and at 2.50 a. m. entirely disappeared.

Heavy magnetic disturbances during entire display, the magnet swinging off scale. At 3.05 a. m. an auroral streamer shot up from the horizon in the NE.; a few moments later the beam dispersed into patches; afterwards, about 3.20 a. m.

forming an arch of the curtain formation. At 3.25 a. m. it entirely disappeared; color, white. At 5.45 p. m. a very faint streamer was observed from the SE., and in a few moments extending over nearly half of the horizon. At 5.50 p. m. it moved slowly from the W. to SE., but returning brighter at the north. During the first part of the display a very slight magnetic disturbance was observed, lasting but a few moments. At 9.05 p. m. another aurora was noticed 90° E. of N., reaching the zenith in a direct line, then moving toward the north, reaching the horizon about 15° W. of N., and disappearing at 9.40 p. m.

[Extract from Lieutenant Greely's journal.]

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Most beautiful aurora, with intense light at times, being sufficiently bright to cast my shadow on snow. Sergeant Rice, the photographer, exposed a sensitive plate toward the aurora without effect, but the constantly changing position of the aurora may have been the cause.

January 22, 1882 (from 4 p. m. to 5.30 p. m.).—Auroral streamer was observed at 4 p. m. from the east, extending towards the north, and forming an arch at 4.10 p. m., disappearing at 4.22 p. m. At 5 p. m. auroral patches of light appeared from N. to 45° W. of N., disappearing at 5.30 p. m. No magnetic disturbance.

January 23, 1882 (9.50 p. m.).—Two auroral flashes, elevation about 45°, one NW. and the other SW. No magnetic disturbance.

February 1, 1882 (from 12.40 a. m. to 1.05 a. m.).—At 12.40 a. m. an auroral arch, about 2° in width, white in color, appeared, extending from horizon 180° E. of N.; center of arch reaching to within about 10° of zenith, disappearing at 1.05 a. m. No magnetic disturbance observed.

February 11, 1882 (from 4.30 p. m. to 4.40 p. m.).—At 4.30 p. m. an aurora quite faint, and white in color, appeared in the form of an arch extending from N. 215° E., to N. 45° E.; center of arch sending up faint streamers of white light, about 10° in length. Display ended at 4.40 p. m.

February 15, 1882 (from 7.03 p. m. to 11.35 p. m.).—At 7.03 p. m. an auroral arch was observed reaching from horizon 40° E. of N. to horizon 45° W. of N., center of arch passing through Polaris, about 2° in width, very bright at its eastern end, and a faint yellow color visible. It began fading away at its western end at 7.10 p. m., entirely disappearing at 7.17 p. m. At 11.35 p. m. Lieutenant Greely observed in NE. faint auroral streamers, disappearing immediately afterwards.

February 17, 1882 (from 9.29 p. m. to 9.38 p. m.).—An aurora, consisting of faint, luminous streamers, was observed at 9.29 p. m., extending from horizon 75° E. of N. to 135° E. of N., varying in height from 29° to 45°, disappearing at 9.38 p. m.

February 19, 1882 (from 10 p. m. to 10.18 p. m.).—At 10 p. m. a faint aurora was observed in the NW., like a diffused light, partly resembling twilight, while in the SE. a faint streamer, about 20° in length and 2° in width, was observed, extending 15° above horizon. At 10 p. m. a streamer rose from the north and reached from the horizon to about 165° E. of the zenith, when it slowly faded away, disappearing at 10.18 p. m.

February 20, 1882 (from 8.16 p. m. to 8.30 p. m.).—A faint aurora, visible through the haze, in form of an arch, at 8.16 p. m., extending from horizon 168° E. of N. to horizon 12° W. of N., center of arch passing through the zenith, disappearing at 8.30 p. m.

February 21, 1882 (1 a. m.).—At 1 a. m. a faint auroral streamer observed in the NE., of only a few minutes duration.

February 23, 1882 (from 12.03 a. m. to 12.18 a. m.).—At 12.03 a. m. three auroral streamers were observed, one due N., one 175° E. of N., and one about 190° E. of N., the first one disappearing at 12.07, the second at 12.12, and the last one at 12.18 a. m.

October 2, 1882.—Aurora observed at 10.30 p. m., lasting until 3.30 a. m. October 3.

October 3, 1882.—Aurora of October 2 ended at 3.30 a. m. to-day. Aurora observed from 10 p. m. to 12.30 a. m. October 4.

October 4.—Aurora of October 3 ended at 12.30 a. m. to-day.

October 6, 1882 (from 9.03 p. m. to 12 midnight).—An auroral arch, 2° in width, extending from * * * N. * * * passing directly underneath the north star and reaching to within 15° of horizon N. 340° E., was observed at 9.03 p. m. Numerous streamers were observed, extending * * * from a point directly underneath the north star, about 2° in width and 20° in length. The arch broke up at 9.40 p. m., and streamers afterward observed extending downward from the zenith. Small streamers observed in the SW.; color of the aurora white. At 11.15 p. m. only streamers in the SW., irregular in outline, at times reaching to the zenith, which continued until 12 midnight.

October 7, 1882 (from 1.20 a. m. to 9.13 p. m.).—At 1.20 a. m. the aurora formed an arch extending along the magnetic meridian, color white, but quite faint, disappearing at 1.30 a. m. At 9.10 p. m. a faint streamer appeared 45° E. of N., about 20° above the horizon and 10° in length, lasting but three minutes; color white.

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* * * Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

October 9, 1882 (from 10.23 p. m. to 11 p. m.).—At 10.23 p. m. an aurora appeared in the north, occasionally in the form of a beam, shooting up to the height of 15° above the horizon, disappeared at 11 p. m.

October 10, 1882 (from 1.16 a. m. to 1.30 a. m.).—Three auroral streamers were observed at 1.10 a. m. starting from the horizon about N. 120° E. One of them shortly afterwards extended into an arch to within 45° of the zenith, color white, disappeared at 1.30 a. m.

October 22, 1882 (from 10.30 p. m. to 11.50 p. m.).—An aurora observed at 10.30 p. m.; extending from 15° above the horizon at N. 180° E. to 45° above at N. 285° E., in form of an undulating wave of white light, about 5° in width, disappearing at 11.50 p. m.

October 23, 1882 (from 3.07 a. m. to 10.40 p. m.).—A faint auroral arch, extending from the zenith to within 25° of N. 217 E. horizon, visible from 3.07 a. m. to 3.18 a. m. An aurora appeared at 10.23 p. m., in the shape of nebular clouds; not well defined; location about 345° E. of N. and about 15° above horizon, disappeared at 10.40 p. m.

October 24, 1882 (from 6.03 p. m. to 7.50 p. m.) —At 6.03 p. m. faint auroral streamer observed about 20° above the horizon at a point about 40° E. of N.; also streamers about 35° W. of N. and about 20° above the horizon, at times forming an arch, lasting but a few minutes at a time, and breaking up into small streamers, ending at 7.50 p. m.

November 2, 1882 (from 8.30 p. m. to 9.55 p. m.) —An auroral arch, extending through the zenith to N. 135° E., with occasional streamers shooting up from the N. about 45° E. At 9.35 p. m. all disappeared except a single streamer. At 9.39 p. m. very bright streamers, reaching to within 35° of the zenith, disappearing at 9.55 p. m. Magnetic disturbances observed.

November 4, 1882 (from 8 p. m. to 8.40 p. m.).—A faint auroral arch appeared at 8 p. m., extending from N. to N. 90° E., rising about 20° from horizon; color, pale yellow; disappeared at 9.30 p. m., except a luminous appearance along the horizon, which disappeared at 8.40 p. m.

November 6, 1882 (from 3 a. m. to 4.15 a. m.).—At 3 a. m. bright auroral arch of white light from N. to 55° E. horizon to N. 95° E. horizon, passing near constellation Leo Minor. At 2.15 a. m. the position was unchanged, but the arch was considerably fainter, especially in the S. and SE. It disappeared at 3.22 a. m., but reappeared in the same position at 3.50 a. m.; also faint arch through zenith in two E. and W. lines to within 20° of either horizon at 3.55 a. m. Aurora ended at 4.15 a. m.

November 7, 1882 (from 5.07 p. m. to 7.32 p. m.).—At 5.07 p. m. a faint auroral streamer appeared about 45° E. of N., extending upward from the horizon about 20°. At 5.16 p. m. another streamer was observed about 45° W. of N., and a faint luminous light observed between these two points, along and above the horizon. At 5.30 p. m. it formed into an arch, reaching from 45° E. of N. to 45° W. of N. and about 20° above the horizon; at its center, width, 3°; color, white. A beautiful aurora, though of short duration, of the peculiarly clear white which was so prevalent last winter. The streamers had a whorling motion—that is to say, they presented the appearance of an endless screw, which, while moving upwards, also revolved on its axis. At each end of the arch bright, luminous streamers were observed about 20° in height. At 5.40 p. m. streamers at the eastern end of the arch disappeared, and the base of the arch moved to 90° E. of N., the arch at the same time widening and assuming the curtain formation; the streamers at its western extremity curling, with a waving motion, to the zenith. At 5.50 p. m. the streamers disappeared and the center of the arch slowly sank towards the zenith, passing it at 6.15 p. m., when its western end almost faded away, and the eastern end increased in brightness and width; at times being nearly 20° in width at different points between the eastern horizon and zenith. At 6.30 p. m. the arch had disappeared, but faint streamers remained in the east. Aurora disappeared at 7.32 p. m.

November 9, 1882 (from 10.06 p. m. to 10.20 p. m.).—At 10.06 p. m. a faint auroral light appeared above the horizon, between points 60° E. of N. and 90° E. of W., disappearing at 10.20 p. m.

November 10, 1882 (from 10.08 p. m. to 12.25 a. m., 11th).—Between 10.08 and 10.15 p. m. auroras appeared in the form of two arches from horizon * * * within 20° of the horizon 180° E. of N., passing through the zenith, about 2° in width; * * * disappeared at 10.15 p. m. and reappeared before 11 p. m., and continued till 12.25 a. m., November 11.

November 11, 1882 (from 12 midnight to 9.35 p. m.).—Aurora of yesterday disappeared at 12.25 a. m. to day. At 2.30 a. m. auroral arch extending through zenith from W. to SW. horizon * * * a second, fainter arch in the magnetic meridian was observed. At 3.15 a. m. faint auroral light visible, but disappeared at 3.45 a. m. At 6.50 p. m. an aurora was observed, composed of streamers and cloud-like formation in all parts of the sky between points 135° E. of N. and 15° W. of N. In the N. the aurora was the brightest, and at times assumed the curtain formation; disappeared, all but faint beams along the NE. horizon at 7.45 p. m.; color white. It was all gone at 8.40 p. m. Considerable magnetic disturbance noted. At 9.35 p. m. a faint streamer observed 200° E. of N. and about 20° in length.

November 13, 1882 (from 8.20 p. m. to 8.50 p. m.).—A faint auroral arch appeared at 8.20 p. m. and extended from the eastern horizon to the southern horizon, rising to a height of 25° above the horizon at the highest point of arch; color white; disappeared at 8.50 p. m.

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* * * Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

November 14, 1882 (from 9.30 a. m. to 10.05 a. m.).—At 9.30 a. m. an auroral arch appeared, extending from N. 45° E. to N. 316° E., the center of arch about 10° above the horizon. The colors blue, yellow, and red were observed, the yellow color being very intense. This continued about two minutes, after which a very bright yellow streamer shot up from N. 315° E. to a height of about 20°. From this time onward the arch appeared and disappeared frequently until 9.45 a. m., when it disappeared. A few streamers appeared occasionally until 10.05 a. m. when the display ended. There was a decided magnetic disturbance during the morning.

[Extrat from journal of Lieut A. W. Greely.]

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November 14, 1882.—An aurora for a short time this morning, from 9.30 to 10.05 a. m. It showed to one observer vivid blue and red colors, and to a second a bright yellow shade. At one time a patch of blue, red, and yellow like a mock sun, appeared for a few seconds. Occasionally I saw light blue and saffron-yellow tints. I mention these colors, as usually the aurora here is of a mild yellowish-white. That of last evening (November 13) was colorless. The magnet has been very unsteady since yesterday, showing the most marked disturbance last night nine minutes after the display ceased. It seems to be the experience here that the magnet is undisturbed during the prevalence of colorless auroras, but shows marked disturbance during the vivid displays of color, and sudden, violent changes of form.

November 15, 1882 (from 5 a. m. to 12.30 a. m., *November* 16).—At 5 a. m. faint auroral arch 7° in width was observed extending from E. horizon through Leo Geminorum to northern part of L. 20°; also faint streamer from NW. horizon to 15° altitude about 10° E. of Saturn; color of arch white; streamer occasionally showing red and yellow. At 5.20 a. m. the arch was irregular and broken, shifting gradually north and passing through the zenith. It was somewhat brighter at 5.10 a. m.; streamers showing up along the horizon from NW. to N. with considerable auroral light in all parts of the sky. At 5.35 a. m. two auroral curtains were observed, one extending from N. 75° E. horizon, attaining its maximum altitude 10°, about 50° W. of the meridian. There was also considerable light in S. and SE., partly obscured by basin hills. The light quite intense, and was occasionally as bright as a star of first or second magnitude; color white in some parts near horizon, occasional red. At 5.40 a. m. aurora quite faint except in NE. At 5.50 a. m. aurora presents about same appearance as at 5.20 a. m., with the addition of a slight curtain formation in NW. and SE. At 6 a. m. the auroral light above Hall Basin was quite intense, and at 6.25 a. m. faint streamers shooting up from all points of the horizon. At 6.35 a. m. arch quite bright was observed extending from N. 95° E. to NE. 315° E., passing about 10° N. of zenith. At 6.45 a. m. the arch was very bright, especially at the zenith, where it was about 20° in width and of intense white. The streamers had all disappeared. At 7 a. m. the whole northern sky was filled with streamers, extending about 15° beyond the zenith, where it was very bright, accompanied by a moving motion reaching towards the horizon. At 7.15 a. m. the streamers disappeared and a curtain formed, reaching from N. 3° E. of zenith. At 7.30 a. m. streamers being principally in the S. and W. horizon. At 8.17 a. m. there were only a few irregular streamers, and at 8.20 a. m. the streamers began to fade, and entirely disappeared at 8.28 a. m.

[Extract from journal of Lieut. A. W. Greely.]

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November 15, 1882.—Sergeant Israel called me at 5 a. m. to observe an aurora which had been very brilliant. It was at first of the curtain formation and covered the entire horizon. The curtains were later accompanied by many streamers which ran to the zenith. It continued with brilliant but varying splendor until after 8 a. m. It would be utterly impossible for any one to describe its graceful and beautiful outlines or enumerate their peculiarities, so intricate were the form and rapid the changes. The curtain, in folds, shifting from point to point at times suddenly faded, showing but a pencil-line of light which resembled threads of liquid fire. The streamers repeatedly changed from the most intricate garlands to the most elaborate convoluted network; then came gleaming lances perhaps to suddenly change into lace formations, and then return as shining spears which would suddenly spring up and form into arches. The light as observed by me for an hour or more was colorless. The temperature is down to −30° [−34.4° C.] again.

At 4.25 p. m. a faint aurora was observed from N. 33° E. gradually brightening. * * * It later assumed the curtain formation, and extended from N. 35 E. to * * * at 5.12 p. m. * * * At 6.30 p. m. the light was faint in north, and at 8 p. m. continued quite faint in N. At 10 p. m. a few feeble streamers around the horizon showed very faintly to the N. and NW. The aurora disappeared at about 12.30 a. m. November 16.

[Extract from journal of Lieut. A. W. Greely.]

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November 16, 1882.—An auroral display which remained continuous during the greater part of the day. It first appeared in dim patches, in the northwest about 15° above the horizon, which gradually brightened and took the shape of a regular cone, which lasted for five minutes or more, while from its sharply, well-defined summit ascended luminous auroral clouds with a whorling or curling motion. These clouds emanated apparently from the summit of the cone, in the form of sharply-defined spasmodic puffs, such as are seen at times issuing from the smoke-stack of a locomotive. The clouds thus thrown out immediately diffused and disappeared without assuming any marked formation.

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* * * Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

[Extract from the journal of Private C. B. Henry, of November 16, 1882.]

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I happened yesterday, while at work outdoors, to look toward Bellot Island, and saw a small, dim auroral light appear from about N. 260° E., which gradually became brighter and shot up to an altitude of about 20°. The best idea I could give of its formation or movement is about like the smoke ascending and curling up from the crater of a volcano, being discharged in puffs and floating away in a luminous mass.

[Extract from the journal of Sergeant D. C. Ralston, November 16, 1882.]

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A magnetic storm evidently raging, as the needle is on the jump all the time; five-minute readings are being kept up, and the sky is almost constantly filled with aurora.

[Extract from the journal of Sergeant D. L. Brainard, November 16, 1882.]

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The sky was filled with auroras during the greater part of the day. The observers also speak of several displays which occurred last night, some of which were of remarkable beauty and intensity of coloring. A well-marked magnetic disturbance was also experienced.

The only display witnessed by me was between 10 and 11 o'clock this morning. A bright streamer sprang from the southern horizon, gradually approaching the zenith with a labored movement, closely resembling the spasmodic puffs of smoke rising from a working locomotive. Remaining in this position a short time, it was gradually dissipated and slowly disappeared.

It had scarcely faded from view before another streamer darted with great rapidity from the northern sky, and passing through the zenith reached the southern horizon, where it remained for several minutes, glowing with an intense brilliancy, which perceptibly enhanced the feeble light furnished us by the rapidly departing sun. That portion of the streamer 10° above the northern horizon had assumed a most peculiar formation, that of a spherical coil, and was twisted into the most inconceivable shapes. It disappeared about half an hour after the first had made its appearance.

An aurora appeared at 9 a. m., November 16, in the NE., extending from the zenith to the horizon * * * At 9.40 a. m. another arch formed, extending from N. to 35° E. of N., the center of the arch about 40° above horizon. An arch north and south from horizon to horizon, passing through the zenith was observed. At 11.20 the arch disappeared, all but faint streamers in the NW. The arch reappeared repeatedly, breaking up and reforming again, until 2 p. m. * * * At 2.15 p. m. streamers were seen in N. and SW. At 3 p. m. an arch formed from points N. 115° E. to N. 215° E., and 15° in height at its center. At 3 p. m. an arch from N. 10° E. to N. 255° E., center about 15° above horizon * * * At 4.20 p. m. streamers in the SE. were observed, and an auroral light in the W. * * * At 5.10 p. m. curtains were seen in the S. * * * At 7 p. m. a very bright arch formed, extending from N. 100° E. to N. * E., with the center about 60° above the horizon. It was very bright and accompanied by a waving motion, moving from W. to E. At 7.15 p. m. the arch entirely disappeared, but faint streamers remained in different parts of the horizon. At 10 p. m. the aurora showed very faintly in the W. At 12 midnight an arch appeared, extending from N. 10° E. to N. 120° E., passing through the zenith, and very bright. At the same time streamers appeared in the SW. The magnetic disturbance during the day was great.

November 17, 1882 (from 1 a. m.)—At 1 a. m. two auroral arches were observed, one extending from the western horizon to the northern horizon * * * The second arch started from the horizon towards the northeast at about the same height. At the same time several beams or columns were observed in the east, extending from the horizon upward to a height of 15°. Color of the aurora white or pale yellow. At 2 a. m. the eastern sky was illuminated by an auroral cloud of brilliant white. The cloud soon disappeared and gave place to several beams of various length from 5° to 20° in height. At 3 a. m. an indistinct arch was observed extending from 20° E. of N. to 160° E. of N. At 4 a. m. a broad undulating line extended from NW. to SE. and passing through the zenith. There were also at this time many small curves of auroral clouds in shape like a horse's shoe. They were arranged on either side of the undulating line and had their concave sides toward the SE. At 5 a. m. the aurora was still visible, being at this time composed of several blotches of clouds in different parts of the heavens, but were not particularly bright or noticeable. At 5.15 a. m. the whole sky was suddenly covered with waves, rings, and lights of intense brilliancy; all was in such quick and constant motion that it was impossible to give more than a general description of it. In an instant the characteristic of forms were very noticeable and well marked. At 5.20 p. m. there was formed near the NE. horizon a mass of 8 concentric curves of 15° to 20° radius. The ends of the curves directed towards the SW. and were turned backwards, forming a double curve much in shape like the letter S. The minor curves quickly disappeared and quickly reappeared, or were replaced by others evenly formed on the outside. This formation lasted about two minutes, leaving in quick, waving motion to the southward. There was also at this time a broad irregular line of about 5° width extending from a point 90° E. of N. This also was in waving motion toward the SE.

Color: The colors of this remarkable aurora were the most marked characteristic of it. The lower part or edge was colored red, which at times varied to pink and violet. The center was colored white or pale yellow and sometimes a cream color, the upper or highest portion being a light green. The atmosphere also partook of these colors, but much fainter, and varied considerably.

* * * Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

The light was of dazzling brilliancy, so much so as to cause momentary blindness when coming from a dark room. Objects in the landscape were as plainly visible as when in the light of the full moon.

Sound: No sound which could be attributed to the aurora was heard, although careful observations were made to determine this point.

From 5.05 to 5.20 p. m. the sky was almost entirely covered with aurora. After 5.30 p. m. it commenced to disappear.

Forms: The general formation of the display was that of [silk], hanging in loose flowing folds. This formation predominated, although all forms, such as beams, arches, &c., were represented.

Direction: The prevailing direction was toward the south rather than toward the north.

Height: A marked characteristic was the height the display reached. Above the south * * * No time at a greater elevation than that of * * * observed in these latitudes. It often [appeared] much lower, and so apparently almost touched the earth. At 5.25 p. m. bright streamers shot up from N. 15° E.; color, white; altitude about 40° above the horizon. At 6 p. m. arches appeared, passing from N. to S., and disappearing at 6.25 p. m. An arch appeared again in same place with streamers shooting from the north, arches appearing and disappearing, at intervals of a few moments, until 6.35 p. m., when the arches disappeared, leaving only a few faint streamers in the N. At 6.45 p. m. all had disappeared. The aurora reappeared at 8 p. m., and bright streamers were observed shooting up in the NE., with an arch which extended from N. 20° E. to 120° E. of N., and about 15° above horizon. At 8.35 p. m. several arches formed, extending from N. and S., and passing through the zenith; the eastern sky seemed all afire, while to the northward it appeared a greenish white color. At 8.45 p. m. it was much fainter. At 9 p. m. streamers appeared, extending downward from the zenith, radiating from the star "Polaris," the streamers reaching to the horizon. At 9.10 p. m. the display disappeared, leaving only a few streamers in the NE. There was a strong magnetic disturbance, and observations of the magnetometer were continued at five-minute intervals all day.

At 5.30 a. m. a bright red light appeared in the NE. [it extended] up to a height of 45°. This color remained with a varying brilliancy until 6.05 a. m., when it disappeared. The main portion of the aurora disappeared at 5.30 a. m., but portions remained visible until 6.40 a. m., when all had disappeared. The last portion was of a thin cloud, extending along the horizon from NW. to SW., through which the clouds were dimly visible. This remarkable aurora was observed by three or four members of the expedition, and also by the observer on duty at the time. The following report of the aurora is supplementary to the foregoing account, and is by Sergeant Israel, who was one of the three who observed it:

Arrangement of colors: The finest display of colors was afforded by the spears of light and streamers darting downward from the auroral curtains. In these the colors were arranged in their spectroscopic order, and an observer, facing east, saw the red, which, in most instances, was rather dull, on his right; violet on his left. The colors from green to violet were especially clear and brilliant. They were the last to appear and the first to disappear; in no instance were they observed continuously for more than three seconds.

In the cloud-like band referred to in the foregoing record, the higher colors, from green up, were confined to the edges of the columns. They seemed to move around the columns in an ascending spiral, and were not as bright as in the curtains. It was this part of the aurora that sank at 5.25 a. m. to an altitude of apparently not more than 100 feet [30^{m}], although it is impossible to judge of this with accuracy. At 11 a. m. a bright streamer shot up from N. 15° E., and ascended spirally to the zenith, and the NE. horizon was bathed in pale red color. At 11.17 a. m. streamers were observed in the NW. At 11.20 a. m. the display ended.

[Extract from journal of Lieut. A. W. Greely.]

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November 17, 1882.—Sergeant Gardiner called me at 5 a. m. to observe a very brilliant and remarkable aurora. He said that its greatest beauty had vanished before I saw it. As seen by me, however, it was a most extraordinary display of the curtain formation, which covered the entire heavens and was constantly changing, never quiescent even a second. The very magnificence of the display forbids any attempt at description. A very marked magnetic disturbance appeared at the same time, and I ordered five-minute readings to be taken until further orders. Lieutenant Lockwood assisted in the work to-day. The five-minute readings were continued throughout the day. The range of the needle register was considerably over 19°. At 8.35 a. m., Göttingen mean time, the magnetic variation was but 92° 51′ 6″ W., being the lowest which has yet been made. The aurora was visible over nine hours to-day.

[Extract from the journal of Private C. B. Henry, of November 17, 1882.]

* * * * * * * * * * *

The aurora of this morning was a very low one, and we are, I think, the only party that ever could say that we were in the midst of electric light. In fact its alarming close proximity scared one of our members considerably. At 11 a. m. I noticed a bright streamer from N. 10° E. and spirally ascended to zenith, and the northeastern horizon was bathed in a pale red color.

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* * * Indicates letter-press copy was illegible.—A. W. Greely, Lieutenant.

The aurora which occurred this morning was undoubtedly an exhibition that never will be forgotten by the members of the expedition. From 1 a. m until 9.10 p. m. (with intervals) the glorious spectacle was almost constantly before our bewildered eyes. The most remarkable and brilliant display occurred between 5 and 6 a. m., and I will alone confine myself to the events of that short hour, as the others would be only adscititious. When the observer stepped outdoors at 5 a. m. nothing but a few blotches and patches of irregular and colorless light was visible, but upon completing his magnetical observations, fifteen minutes past the hour, and upon suddenly coming from the dark observatory, the dazzling light that suddenly met his eyes beggars description, and produced momentary blindness. The whole heavens were covered with one vast mass of brilliant light of intense brightness.

His rapid entrance into our quarters, and calling out for others to witness the spectacle, caused *all* to arise and rush outdoors.

The display had sufficient attraction for the most of us to hold us spellbound for more than twenty minutes in a temperature of 66° below the freezing-point. The aurora defies description; it is indescribable by words, and not to be pictured by painters' skill. Nothing can convey a conception of the richness and vividness of its colors and infinite variety of tints.

Arches with every shade of red, from the palest pink to crimson, and every shade of yellow, from brilliant orange to delicate primrose, now dazzling and resplendent, now gently glowing in humbler effusion, and suddenly shooting thousands of narrow radiant streaks and bars of light in a semicircle toward the zenith. Streamers of every shade of green, from the softest apple or pea to the dark invisible green of the hemlock pines, harmoniously blend the lonely tints of lilac and purple with the celestial blue of the canopy, and shining here for an instant and then playfully skip to another portion of the sky.

In the north we saw annular circles, with multitudinous streaks and spots of every gradation of hue and of but momentary transitions, which defy descriptions; while in the northeast eight concentric curves of 15° to 20° radius, with their ends turned backward, assumed the form much like the letter "s". The inner curves, quickly disappearing and reappearing, or being replaced by others formed on the outside, presented to the eye the ever shifting variations of the kaleidoscope. The whole display now and then united in a luminous half-transparent curtain, rolling quiveringly from horizon to zenith, curling and expanding, rising and falling like the waves of an angry ocean, and suddenly steadying down again to the predominating characteristic formation of the loose flowing folds of a curtain, and veiling for the time the stars.

The light emitted during the most intense brightness was fully equal to that of a full moon, and entirely eclipsed all but stars of the first magnitude. Objects in the landscape were plainly visible and abundant. The height which the display maintained above the earth was at no time at a greater elevation than that of cumulus clouds, and apparently almost touched the ground, but no noise of any kind was audible. * * *

[Extract from the journal of Sergeant G. W. Rice, November 17, 1882.]

* * * * * * * * * * *

To-day, however, was witnessed the most remarkable display of the aurora phenomenon that has yet been observed by any of the party. Gardiner was on duty as an observer, and at 5.15 a. m. rushed in and awakened all hands to see a grand sight. The magnificent spectacle is now the only topic for conversation, and, although I can get full accounts of it, I cannot say that I saw it myself. The journals, both official and private, have pages covered with descriptions more or less glowing. I can only note that from all accounts it must have been a grand spectacle. The whole heavens appear to have been occupied by it. The general formation was curtain, hanging in heavy folds, but at times it assumed all shapes, rapidly changing into beams, arches, &c. The colors were remarkably brilliant and vivid. At the base red, pink, and violet, rapidly changing and interchanging. In the center the colors were lighter, pale yellow or straw color, and white. The light of illumination was equal to that of the full moon. The surrounding landscape could be plainly made out, and stars of the second magnitude were eclipsed. Coming out of the dark quarters, all who observed it felt at first blinded; and the curtain at one time appeared so near above their heads that Gardiner and Israel speak of having unconsciously dodged to avoid it. Israel, who is a very close and intelligent observer, thinks that at times the aurora could not have been more than 100 feet from the earth.

During the display the magnetometer was violently disturbed, and so indeed it was during the whole day.

The display, in its greatest magnificence, soon passed away, but less remarkable displays were seen all day, and some of them which I myself saw were very beautiful.

[Extract from the journal of Sergeant W. S. Jewell, November 17, 1882.]

* * * * * * * * * * *

Still auroras. This morning the finest display, with but one exception, I ever saw, and that was when returning home in the *Gulnare*, in 1880. Gardiner, who was on duty at the time, called us up, and it was well worth the trouble. Israel went to the magnetic observatory and found the magnet very much disturbed in consequence. We began five-minute readings which continued through the day, Henry and Connell doing the meteorological work.

[Extract from the journal of Sergeant D. C. Ralston, November 17, 1882.]

* * * * * * * * * * *

A magnificent auroral display early a. m. Everybody up to witness it. The entire heavens covered with all kinds of formations, and movements in its change of formations so rapid that the eye could not follow them. It appeared so low down at times that I raised my hand instinctively expecting to *bathe* it in the light. The sky was entirely free from clouds, and the light of second-magnitude stars was eclipsed. The magnetic needle was violently agitated, and five-minute readings of the needle continue. The aurora visible all day long. Objects during the finest display were as plainly visible as by the light of the full moon.

The finest display was about 5 a. m. Lieutenant Lockwood assisted us at the magnetic observatory.

No description that I can give would convey an idea of its grandeur.

[Extract from the journal of Sergeant H. S. Gardiner, November 17, 1882.]

* * * * * * * * * * *

Have been having an extraordinary disturbance of the magnetic needle for some hours past. This morning about 5 a. m., when coming out of the magnetic observatory after making my observation, I was suddenly dazzled by the display of light which greeted my eyes as I emerged from the

darkness. The transition was so great and so sudden that I think it must have been half a minute at least before I recovered myself sufficiently to think what had happened. The whole heavens seemed one mass of colored flames, arranged and disarranged and rearranged every instant. The display was so close to the earth that we repeatedly put up our hands as though we would touch something by so doing. There was one person who was so much affected by the display at its grandest moments that he lowered his head and put up his hands as though to ward off a blow. All hands came from their beds to witness the display, and auroras have been our most common phenomena since darkness set in. Magnetic observations (extra) were immediately commenced, and continue at intervals of five minutes until the display shall end.

This display sustained its greatest grandeur for probably ten minutes, and then gradually grew less brilliant. It continued all day with occasional vivid flashes. I doubt not that this is the greatest exhibition of the aurora which has ever been witnessed. I have read descriptions of other great auroras, but they would but partly suffice for the display I have just recorded, and which I think it would be impossible to describe adequately.

[Extract from the journal of Sergeant D. L. Brainard, November 17, 1882.]

Great excitement prevailed during the whole day and a portion of last night, owing to the beautiful displays of aurora which we have observed. Being aroused by an unusual commotion at 5.15 a. m., in consequence of an auroral display of unusual appearance, I, in company with several others, rushed outside. For a moment we were startled by the unparalleled magnificence of the scene spread out before us. The heavens appeared to be one luminous mass of blazing light, which at times exhibited colors of pale blue, yellow, and white.

The aurora was of no definite formation, but extended to all portions of the sky; the arches, streamers, and patches blending harmoniously together so as to form one huge sheet of flame, through occasional openings of which stars of the first magnitude might be seen shining dimly, the light of all others being extinguished by the dazzling radiance of this remarkable phenomena.

At the zenith, and extending downward for 30° on all sides, the sheet of light appeared without an opening, the edges being of great irregularity and shooting out slender pencils of radiant light. The movement in the mass soon became general, and the rapidity with which it would shift its position and assume new forms and phases was really startling to the observer. The gradually drifting changes which have generally characterized the auroras witnessed at this place were wanting in this one. A streamer would leap from the horizon, and passing through the zenith reach the opposite horizon with the quickness of thought; then receding, it would appear to swoop downward almost to the earth, taking new forms as it advanced, coiling and twisting in the most convulsive manner through the glorious canopy of the heavens, like a gigantic serpent. In the northern sky there gradually appeared an intense vermilion color, which expanded for 10° above the horizon, and remained for several minutes in this manner, its extreme brightness suggestive to the mind of a great conflagration.

A few minutes earlier than the time which I have recorded Sergeant Gardiner witnessed a display of unusual grandeur, and of which the latter is but a slight modification. It was of unparalleled brilliancy, and its light equal to the full moon. The prismatic colors were at one time discernible. Sergeants Israel and Linn also saw it when it was at its zenith of splendor, and both speak of its near approach to the earth, and the rapidity of its movements through the heavens.

November 18, 1882 (from 4.40 a. m. to 9.20 p. m.).—An aurora appeared at 4.40 a. m. in the shape of a white light. The horizon between points directly north and 135° W. of N. varying in width from 2° to 5°. An occasional streamer shot up, with faint colors of red and blue at their base, disappearing at 5.23 a. m. It reappeared in form of an arch at 6.15 a. m. All gone at 6.53 a. m. Aurora again from noon to 3.55 p. m. At 4.30 p. m. a beautiful aurora was observed, extending from N. 10° E. to N. 270° E.; elevation about 30° above the horizon. Numerous small flames, curling like puffs of smoke in several red, blue, and green colors, were outlined, were constantly shooting up and disappearing almost instantly. Irregular light remained visible until 5.49 p. m , when all but one very bright streamer in N. 110° E. disappeared. At 6.15 p. m. all had disappeared. At 8 p. m. an auroral streamer was observed from N. 170° E., and gradually appeared toward the north until it reached N. 50° E., then meeting another and forming an arch of curtain formation. The display was of a few minutes duration only. Another arch formed at 8. 20 p. m., extending from N. to E. A slight glow was seen in the NE. At 8.25 p. m. all but the glow had disappeared. At 8.40 p. m. a faint arch from direct north and extending to N. 115° E. was seen; the center of the arch was about 60° in height. At 8.50 p. m. it had entirely disappeared. At 9 p. m. another display began, and ended at 9.20 p. m.

[Extract from journal of Lieutenant Greely.]

November 18, 1882.—The magnetic disturbance still continues. Five-minute readings were made until 9 p. m. (W. M. T.), when the disturbance apparently ceased, and they were discontinued. At 10.20 p. m. (G. M. T.) on November 17 the largest recorded magnetic variation was noted. The needle then stood at 113° 19′ 8″ W., a change of 20° 28′ 2″ since 8.35 a. m. of November 16. The aurora was observed frequently during the day.

November 19, 1882.—Magnetic disturbance again occurred, and five-minute readings were kept up from 5 p. m. Aurora appeared shortly after the disturbance of the magnet commenced.

November 20, 1882.—Five-minute readings continued the greater part of the day owing to the recurring magnetic disturbance.

[Extract from the journal of Sergeant D. L. Brainard, November 18, 1882.]

Several auroral displays were observed to-day, one of which I was fortunate enough to witness at 12.30 p. m. It consisted of a complete arch extending from horizon to horizon (NE. to SW.), passing through the zenith. Its width at the horizon was about 5°, but it expanded to 8° at the zenith. The illumination of the central portion of the arch was dull and subdued, but the edges were luminous with coruscations of light.

November 19, 1882 (5 p. m.).—There was probably an aurora at 5 p. m , as there was a strong magnetic disturbance, and a faint light was observed through the clouds. At 5.45 p. m. it was very plainly visible in zenith, while at 6 p. m. it was not

well defined, but its presence was evident. At 7.20 p. m. no aurora visible; 8.20 p. m., bright light well defined observed about 20° above N. horizon; 8.35 p. m, very bright; 8.45 p. m., bright in zenith; 9 p. m., still bright in zenith; 9.20 p. m., none to be seen, owing to amount of frost in air.

November 20, 1882.—Five-minute readings of magnetometer were taken until 2.15 a. m., the 20th. There was a magnetic disturbance at 7 a. m. of the 20th, when five-minute readings were commenced and continued until 3 p. m.

November 21, 1882 (12.50 a. m. to 11.25 a. m.).—At 12.50 a. m. auroral streamers were observed in the N. and NE., between points 9° E. of N. and 20° W. of N., disappearing immediately. At 11 a. m. streamers, varying in height from 5° to 20°, appeared, being most numerous 45° E. of N.; they disappeared at 11.25 a. m.

November 23, 1882.—Aurora from 9 to 9.10 a. m.

November 24, 1882.—Auroral streamers at 5.40 p. m. and frequent later, despite the bright moon which at 9 p. m. was equal to the light of a candle at a distance of 49.5 inches.

November 25, 1882.—Auroral streamers from 6.45 to 7.10 a. m., and 9.40 to 9.55 p. m. Auroral streamers from 7.18 to 7.33 p. m.; 8.25 to 8.37 p. m., and 8.50 to 9.30 p. m.

November 28, 1882.—Auroral streamers 3.13 to 3.30 a. m.; 11.20 to 11.27 a. m.; noon to 12.50 p. m.

November 29, 1882 (11.15 a. m. to 11.18 a. m.).—An auroral line extending from the horizon, * * * the zenith to the southern horizon or to the limits of the twilight, first observed at 11.15 a. m. and continued three minutes.

December 1, 1882 (from 11.55 a. m. to 3.08 p. m.).—At 11.55 a. m. a single auroral streamer shot up in the north, and immediately vanished. At 1.15 p. m. auroral arch (none visible anywhere at 1.14 p. m.) appeared. Width about 2° and altitude 8°. A dark segment underneath. The arch was surrounded by auroral flames resembling alcohol flames. The display lasted but three minutes, the west end of arch disappearing first. At 1.35 p. m. a ribbon-shaped aurora appeared—a narrow band about 2° wide, of colorless light, exactly in the magnetic meridian, extending from horizon to horizon through the zenith. Occasionally the entire ribbon would drift slowly a few degrees to the north, and then slowly resume its former position. At 1.40 p. m. the ribbon had assumed a twisted shape, and increased in width to about 5°. Its center had moved half way from the zenith to Ursa Major, the ends remaining at the horizon in magnetic meridian. At 1.32 p. m. only faint shaft of light, in 160° azimuth. At 3.00 p. m. it reappeared, and disappeared at 3.08 p. m, during the interval in magnetic meridian, the center in Ursa Major.

December 2, 1882 (from 3.50 a. m. to 8.45 a. m.).—An aurora was visible from 3.50 a. m. to 6.30 a. m. No magnetic disturbance noticed. An aurora was visible from 8.05 to 8.45 a. m.

December 3, 1882 (9.20 p. m.).—At 9.20 p. m. an auroral arch extending about 40° above the horizon. The color of aurora was white. At * * * the arch had broken up and several streamers shot up from each end of the arch about 30° toward the zenith.

The aurora disappeared about 10 p. m.

December 4, 1882 (from 10.10 p. m. to 10.20 p. m.).—At 10.10 p. m. auroral streamers shot up from the SE. horizon just beneath Orion's Belt and extended to a point midway between the stars Andromeda (a) and Pegasus. The display was of the form of a wedge, the widest part being in the SE. and about 5° in width. Aurora disappeared at 10.20 p. m.

December 5, 1882.—At 11.10 a. m. an auroral light appeared from behind the clouds or horizon at N. 45° E., and also at N. 255° E., extending toward zenith from each point indicating an arch beneath the clouds. At 12 noon light showed dimly, and at 12.10 it was entirely obscured by clouds. Light appeared in N. and W. at 1.40 p. m., disappearing at 1.50 p. m. At 8.55 p. m. broad auroral beams of white light shot up to zenith from the horizon at a point 20° W. of N. It remained in sight until 9.35 p. m. Magnets apparently not affected.

December 6, 1882 (from 8.50 a. m. to 9.30 p. m.).—An aurora was observed from 8.50 to 9.30 a. m.; 1.40 to 1.50 p. m. visible through clouds; 8.55 p. m. to 9.30 p. m. observed.

December 7, 1882 (from 9.05 a. m. to 5 05 p. m.).—Auroral streamers appeared near to zenith at 9.05 a. m., extending about 10° toward the horizon. At 9.10 a. m. it had disappeared. Auroral streamers from 5 to 5.05 p. m.

December 8, 1882 (5.07 p. m.).—A very faint auroral arch appeared, reaching from N. 15° E. to N. 345° E., with center about 5° above the horizon. At 5.30 p. m. an arch formed, reaching from one horizon to the other, and directly in the magnetic meridian. Color white, but quite faint. At 5.45 p. m. disappeared. Magnet very quiet. * * * At 8.45 p. m. a white auroral streamer appeared about 15° W. of N., drifting at times a few degrees to the south and regularly returning to its original junction. At 8.56 p. m. several brilliant streamers rose from N. 30° E., reaching to the zenith. At 9.05 p. m. it had entirely disappeared. No magnetic disturbance.

December 9, 1882 (from 3.30 p. m. to 9.15 p. m.).—Auroral clouds observed from N. to 40° E.; altitude, about 30°. At 3.45 p. m. streamer observed in the magnetic meridian, drifting slowly to the south. At 10.30 a. m. a single streamer observed

* * * Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

E. of S., colorless. At 4 p. m. a streamer observed, extending from horizon 80° E. of N., reaching to Polaris, disappearing at 4.15 p. m. At 4.40 p. m. narrow auroral band, extending from SW. horizon to zenith, observed by Lieutenant Lockwood. Not visible at 4.45 p. m. At 8.03 p. m. streamer observed to shoot up from horizon at N. true, by Private Schneider; disappeared at 8.05 p. m.

December 10, 1882 (11.10 a. m. to 9.30 p. m.).—At 11.10 a. m. an auroral streamer about 27° E. of N. was observed, extending from horizon 40° upward; color, white; visible about two minutes. At 12.03 p. m. an auroral streamer was observed at a point 45° E. of N., about 100° in length, reaching from horizon to beyond the zenith, passing the zenith about 15° E.; color, white. Disappeared at 12.16 p. m. At 8.16 p. m. auroral arch observed, extending from N. 45° E. to N. 315° E., with center about 40° above horizon; at north, color white. At 8.35 the center had risen to within about 10° of the zenith, the extremities remaining in about the same position on the horizon. At 8.43 p. m. center within 5° of the zenith, but very faint. At 8.55 p. m. the arch had moved to zenith, but a second arch formed in the original position of the first. At [illegible] p. m. the second one had become very bright, with a few streamers to the south of the western end. At 9.17 p. m. it had moved to the south, but was very faint. At 9.30 p. m. entirely disappeared.

December 11, 1882 (9.05 a. m. to 5.45 p. m.).—At 9.05 a. m. an auroral ray appeared in NE., stretching from near horizon to a point about one-eighth of the distance to the zenith; color, white. Disappeared in ten minutes. At 9.15 p. m. auroral ray appeared just east of north, from horizon to about one-fourth the distance to zenith; color, white. Disappeared in ten or fifteen minutes.

December 12, 1882 (aurora 3.15 to 3.45 p. m.).—At 3.15 p. m. an auroral arch appeared, about 3° in width, extending from points on the horizon 20° E. of N. and 100° W. of N.; center of arch about 30° above horizon; color, white. Disappeared at 3.45 p. m.

December 14, 1882.—Aurora observed at 12.18 a. m. in form of an arch, extending from N. 15° E. to N. 180° E., with center about 60° above horizon; color, white; brightness of arch quite intense. Disappeared before 12.30 a. m.

December 15, 1882 (5.50 a. m. to 11.40 a. m.).—At 5.50 a. m. an auroral light appeared on horizon about 30° W. of N. At 6.15 a. m. there sprang from it two parallel bands, one of which extended completely along the horizon from about 20° W. of N. to about 20° E. of N. The other extended from the horizon 40° W. of N. to the zenith; color, pale yellow. At 6.18 a. m. one arch had disappeared. Display all gone at 6.45 a. m. At 7.30 a. m. two auroral streamers 345° to 350° azimuth; color, white. One about 2° in breadth was very bright, and reached to the zenith; the other faint, attained an altitude of about 40°. 7.40 a. m., unchanged. Disappeared before 8 a. m. At 8.25 a. m. a faint auroral streamer was observed 20° W. of N., and extending to the zenith. Disappeared at 8.35 a. m. Aurora appeared in the form of an arch, extending from 15° W. of N., passing through the zenith to 180° E. of N. Color, white. At 9 a. m. this arch was observed to be changing its position, passing slowly to the west, without any change taking place in its formation. At 9.15 a. m. the arch broke up, forming a perpendicular beam of light to its original position, fading away in the SW., and entirely disappearing at 9.30 a. m. At 10.35 a. m. a faint aurora appeared in the north, passing through the zenith to a point 120° E. of N., and extending to about 30° above the horizon. At 10.45 a. m it passed to the W., disappearing at 10.50 a. m. At 11 a. m. streamers were shooting in the N. from the horizon to the zenith, passing slowly to the W. They disappeared at 11.40 a. m.

December 16, 1882 (from 2.05 p. m. to 12 midnight.).—Aurora was observed at 2.05 p. m. A faint streamer shot up from the horizon in the east to a height of about 20°. It afterwards took the form of an arc of a small circle extending towards the south. It got much brighter; but disappeared at 2.15 p. m. Slight disturbance of the magnets was observed. At 5 p. m. an auroral arch was observed, extending from 30° W. of N. to 80° E. of N., the center of the arch about 40° above horizon; white in color. There were a number of streamers varying from 5° to 15° in length. At 5.20 p. m. the arch at its eastern end assumed the curtain formation, and the northern half of the sky, between 90° W. and 90° E. of N., filled with streamers and luminous clouds. At 5.30 p. m. the curtain formation disappeared; at 5.40 p. m. faint streamers were seen in all parts of the sky, being most numerous in the western portion; at 5.45 p. m. arch reappeared in the north, 43° W. of N. to 90° E. The center of the arch was 25° above the horizon; streamers were numerous near the zenith. The streamers south of the zenith disappeared. At 6.10 p. m. there was an intense white light 45° E. of N. in the arch. At 6.22 p. m. all disappeared except the arch in the north, which remained faint At 6.45 p. m. only a faint light along western horizon could be seen At 7.15 p. m. light along horizon extended from 30° W. of N. to 115° E. of N. At 7.30 p. m. a few cloud-patches of light were observed above horizon, and at 8 p. m. streamers 2° in width and 60° in height, 20° E. of N., were visible. At 8.15 p. m. streamers were quite numerous, varying from 5° to 15°, near the eastern horizon; at 8.30 p. m. the aurora, in the form of an arch, was seen, N. to 100° E. of N., the center of the arch being about 30° above the horizon and about 5° in width. At 8.37 p. m. it disappeared, all but the circular formation directly north. At 9 p. m. the arch appeared to be the same as at 8.20 p. m. At 9.15 p. m. streamers were seen from the horizon to the zenith, at a point 100° E. of N., spiral shaped, and widening out in the zenith. They drifted slowly SW., and soon disappeared. At 9.45 p. m. luminous clouds were observed in the NE. At 10 p. m. the arch was the same as at 8.30 p. m., and at 10.15 p. m. the arch through the zenith, from N. to S., was 2° in width.

At 10.30 p. m. the arch was breaking up and the eastern sky filled with luminous clouds and streamers. At 10.45 p. m. arch extending through zenith from N. to S., composed of parallel bands. Width of arch in zenith about 20°; at each end on horizon about 5°; at the same time curtain formation in the east extending upwards 40°. At 11 p. m. arch broken, eastern sky filled with beams drifting towards the east. At 11.15 p. m. curtain formation in the south; general motion towards the N. At 11.30 p. m. beams lying N. and S. passed beyond the zenith to the west. At 11.38 p. m. disappeared in the western sky. Broad bands of white light from northern horizon through the zenith to within 45° of southern horizon, about 10° in width. Two partial arch formations in the eastern sky between north and south.

December 17, 1882 (from 12 midnight to 12 noon.).—At 12 midnight arches broken up and eastern sky filled with bands of light parallel with the horizon. At 12.05 a. m. the entire sky east of the zenith was covered with auroral arches, considerably broken in their formation. There were four extending from N. to E., of a uniform white color. At the same time a few streamers shot up from the western horizon. At 12.35 a. m. the arches had broken and changed their positions to the western sky, when they assumed about the same positions as in the eastern, except a bright arch, which extended from E. to W., with its center about 15° from the southern horizon. At 1.10 a. m. the effect of the display was first noticed on the magnet, but it soon became quiet at its normal declination. At 1.35 a. m. the sky was nearly covered with arches extending from N. to S. At 1.55 a. m. aurora disappeared, except one arch, which extended from N. 90° E. to N. 225° E.; center about 65° above southern horizon. At 2.20 a. m. only a faint outline of an arch in western sky and a few streamers in the E. At 4.15 a. m. three bright arches visible, one on magnetic meridian, one spanning the northern, and the third the southern sky, about 30° above the horizon. At 4.13 a. m., no change in the relative positions of the arches during the last hour. At 5.10 a. m. the southern arch disappeared, and the center one had changed its position from the magnetic meridian to azimuth, N. 135° E to N. 315° E., with its center about 5° south of the zenith, while the northern arch retained its original position.

At 6.15 a. m. the northeastern sky filled with streamers, with three imperfect arches, the highest one reaching from N. to N. 135° E., the others about 10° apart, nearer the horizon. At 7.15 a. m., a bright arch extended from N. 345° E. to N. 135° E., through the zenith. At the same time several streamers shot up from the N. At 7.50 a. m. a broken arch moved from N. to S. horizon, passing through the zenith. At 8.10 a. m. the center had drifted about 20° E. of the zenith, the extremities unchanged. It then faded rapidly, so that at 8.18 a. m. nothing visible except a faint streamer in the west. Display ended at noon.

December 28, 1882 (from 2.22 p. m. to 2.40 p. m.).—An auroral streamer observed at 2.22 p. m., by Lieutenant Greely, about 3° wide, extending through the magnetic meridian from horizon to horizon, with an occasional drift to the south. At 2.35 p. m. no change. At 2.40 p. m. a second arch appeared, of feeble intensity, with base in magnetic meridian and extending meanway between Polaris and Ursa Major. Aurora disappeared at 2.40 p. m. No magnetic disturbance.

December 29, 1882 (from 12.25 p. m. to 12.40 p. m.).—At 12.25 p. m. a colorless auroral streamer appeared on magnetic meridian, reaching to within 40° of zenith, rising from a diffused auroral light on the SW. horizon. Streamer only remained about three minutes. The aurora disappeared at 12.40 p. m.

January 1, 1883 (from 9 a. m. to 10.40 a. m.).—From 9 a. m. until 10.40 a. m., a faint glow along horizon from NE. to SW., probably attributable to auroras along the horizon. A white glow in the SE., suspected to be an aurora.

January 3, 1883 (from 3.52 p. m. to 12 midnight.).—An auroral light extending from 200° to 300° of azimuth, to an altitude of 10°, and colorless streamers were noticed shooting up in altitude from 5° to 10°; disappeared at 4.20 p. m.; reappeared at 4.30 p. m., covering the entire western sky with a whitish glow. Disappeared by 8 p. m.; reappeared at 10.05 p. m. And at 11 p. m. an arch formed 6° wide from N. horizon through Cygnus, lower part of Cassiopeia, and Taurus, touching S. and W. horizon just W. of Orion; color, white.

January 4, 1883 (from 12.18 a. m. to 5.10. p. m.).—At 12.18 a. m. arch remained relatively in same position. At 1 a. m. auroral beam showed, extending from the horizon beneath Jupiter to an altitude of 5° above Jupiter; color, pale white. Aurora disappeared at 1.20 a. m. An aurora of curtain formation appeared at 10.55 a. m. in N. 50° E.; attained an altitude of 45° above horizon. Color, white; disappeared at 11.35 a. m. An aurora extending from N. to S., and passing through zenith, 10° in width, and in color white, with a slight yellowish tint, appeared at 11 a. m., and disappeared at 11.30 a. m. Auroral streamer 46° E. of N., base about 30° above horizon, and about 30° in length, observed at 5.10 p. m.

January 5, 1883 (7.30 a. m. to 10.40 p. m.).—Auroral light observed in the west at 7.30 a. m. Streamers in N., and diffuse light from 280° E. of N. to 90° E. of N. at 2 p. m.; disappeared at 2.15 p. m. Auroral streamers observed in N. horizon at 7.08 p. m.; disappeared at 7.17 p. m. Auroral streamers bright from 7.08 p. m. to 7.17 p. m.; streamers in SE. at 7.50, disappeared at 8.30 p. m. Arch from Regulus through * * * to N. horizon; white light observed from 8.50 to 9.10 p. m. At 9.22 p. m. white streamer of varying intensity about 3° in width, passing from the E. horizon to northern, within 5° of Gemini and Ursa Major; disappeared at 9.30 p. m. At the same time a very faint streamer appeared in N.

* * * Indicate letter-press copy was illegible.—A. W. Greely, Lieutenant.

horizon; disappeared at 9.40 p. m. At 9.50 p. m. arch formed, extending from N. 105° E. to N. 345° E., the center about 70° above the NE. horizon; at the same time a second arch formed parallel and about 25° below; color white. At 10 p. m. the second arch had disappeared, the first remaining in the same position, though not as bright. At 10.15 p. m. it brightened on the east end and was quite brilliant. Very faint at 10.30 p. m., and disappeared at 10.40 p. m. No magnetic disturbance.

January 7, 1883.—Patches of auroral haze in the western sky. At 8.40 p. m. an arch reaching from E. to N.; disappeared about 9 p. m.

January 8, 1883.—Auroral light in the east from 1 to 1.55 p. m.

January 9, 1883 (12.17 a. m. to 12 midnight).—Auroral haze from southern to the western horizon, first observed at 12.17 a. m.; and disappeared at 1 a. m. Auroral light in the E. observed from 8 to 8.15 p. m., extending 10° above the horizon. Auroral light in the W. from 11.25 p. m. to 11.55 p. m. At 11.25 p. m. partially indistinct, and parallel streamers were observed in the zenith and extending downwards through the constellation Gemini; all were about equal in width, 2° in height and apart from each other. At 11.35 p. m. only three remained distinct, and they had considerably descended from the zenith and were running in an angle of 45°. Remained as irregular and diffuse haze until after midnight.

January 10, 1883 (12.01 a. m. to 10.45 p. m.).—Auroral haze continued with occasional changes of position until 12 noon. Auroral light in E. and SE., rising above the horizon, observed at 10 p. m.; disappeared at 10.45 p. m.

January 13, 1883.—Auroral streamer, rising from N. 350° E. and extending about 10° azimuth in zenith. First observed at 7.05 a. m.; disappeared at 7.17 a. m.

January 16, 1883.—Light seen at 1.45 p. m., suspected to be an aurora. At 3.07 p. m. arch appeared, extending from horizon to horizon on magnetic meridian. At 3.17 p. m. was faintly perceptible, entirely disappearing at 3.25 p. m.

January 27, 1883.—Aurora from 11 to 11.30 a. m.

February 3, 1883 (8.45 p. m.).—An auroral arch observed at 8.45 p. m., extending from horizon 145° E. of N. to within 30° of the west horizon, about 2° in width; color white. Disappeared at 8.50 p. m.

February 5, 1883.—Auroral haze.

February 10, 1883.—Auroral arch, extending from the N. to E. horizon to a height of about 10°, observed at 6.05 p. m.

February 14, 1883 (5.50 a. m. to 6.25 a. m.).—Auroral arch observed at 5.50 a. m., extending from horizon 45° west of north to horizon 140° E. of N., center of arch about 85° above horizon; of the ribbon formation, and about 3° in width. Numerous streamers observed lying in all directions near the zenith, also a partial arch formation in the NE.; color of aurora white, disappearing at 6.25 a. m.

February 18, 1883.—An auroral streamer, extending from near magnetic meridian to about 15° east of north zenith, appeared at 6.05 p. m.; ended at 6.14 p. m.

February 24, 1883 (6.15 a. m. to 10.15 p. m.).—At 6.15 a. m. an arch, N. 170° E. and N. 295° E., center of arch about 10° above horizon, with streamers, shot up to a height varying from 5° to 40°. Arch disappeared at 6.23 a. m., and but faint streamers and small patches of white light remained on and above horizon near point 250° E. of N. until 6.50 a. m., when it disappeared. At 12 noon auroral arch appeared, passing through N. 45° E. to N. 225° E. through the zenith. At 12.35 p. m. streamers shot up from SW.; at 1.30 p. m. streamers shooting up in the northeast from 1.35 p. m. to 1.45 p. m.; bright streamers shooting up from the north towards the zenith, when they would fade and pass very rapidly towards the SW. At 1.50 p. m. the whole sky covered with streamers and arches; the east showing a color of greenish white. At 3.20 p. m. an auroral arch from N. 20 E. to N. 110 E., with auroral streamers shooting up from the horizon. At 3.46 p. m. arch disappeared, leaving only a wide irregular belt of luminous clouds along the horizon, with a few streamers shooting up in the north and west. No auroral signs to be seen at 3.55 p. m. Five-minute readings of magnetometer taken a portion of the day; large disturbances observed. At 10.05 p. m. to 10.15 p. m. an aurora was observed.

February 27, 1883.—An aurora consisting of faint streamers, reaching to within 40° of the zenith, observed between points 35° E. of N. and 55° E. of N. at 8 p. m., disappearing at 8.15 p. m.

MISCELLANEOUS OBSERVATIONS.

Under this head are classed observations made:

1st. On the outward voyage, July 7 to August 11, 1881, from St. John's, Newfoundland, to Lady Franklin Bay.

2d. On the retreat by boats from Fort Conger to Cape Sabine August 9 to October 15, 1883.

3d. At Camp Clay, near Cape Sabine, from October 16, 1883, to June 21, 1884.

The barometer observations, which, in all cases, have been reduced for temperature and elevation, and the temperature of the air and relative humidity, are given in Table CLXXIV. The detailed observations of the temperature of the sea, made in the outward voyage only, are in Table CLXXVI; they have been discussed in connection with similar observations at Fort Conger (pages 381–382).

Wind, weather, tides (during retreat), &c., are given in Table CLXXIX.

While the observations during the boat journey, and later, at Camp Clay, were carefully and systematically made, and are worthy of all confidence, yet it should be understood that owing to distressing surroundings these observations were not always made on the exact minute, but they have always been referred to the nearest even time when made between them, as often happened. The boat journey observations of pressure were nearly all made from compensated aneroid barometer No. 2657, an excellent instrument. The barometer used at Camp Clay was a Signal Service mercurial instrument, which had been abandoned by Lieutenant Garlington at Cape Sabine.

The commencement of deaths in April, 1884, necessarily caused gaps in the barometer record, which, as observer after observer died, became more frequent, yet two or more observations were made daily until the barometer cistern, which was cracked when found, was broken in an attempt to remove it from our winter hut to the summer tent.

During the winter of 1883–'84, while realizing that it was a duty to make such observations as were possible, yet consideration for the health and comfort of observers forbade their exposure in an enfeebled condition to extreme temperatures; consequently the temperature was regularly read only at 11 a. m., Washington mean time, during the four months the sun was absent. After the sun returned temperature observations were more frequent until death reduced the number of observers. No day passed in which temperature observations were not made until forty hours before relief came.

Wind observations are few in number at Camp Clay, as their record was judged to be worthless, since the configuration of the coast was such that it blew up or down, never or very rarely transversely.

TABLE CLXXIV.—*Pressure, temperature, and humidity from St. John's, Newfoundland, to Fort Conger, Grinnell Land.*

PRESSURE.

H=29.000+

Date.	Position at noon. Latitude north.	Position at noon. Longitude west.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.	Daily means. Inches.	Daily means. mm., 700 +
1881.										
July 6				.778		.612		.544	.645	52.97
7	St. John's, Newfoundland			.622	.671	.688	.712	.664	.671	53.63
8	50° 32′	53° 05′	.646	.717	.695	.641	.717	.769	.698	54.31
9	52° 37′	53° 15′	.772	.891	.884	1.064	1.025	.996	**.939**	**60.44**
10	55° 00′	52° 53′	.996	.886	.746	.577	.495	.425	.688	54.06
11	58° 08′	53° 52′	.368	.300	.285	.298	.382	.455	**.348**	**45.42**
12	60° 48′	53° 46′	.477	.457	.475	.491	.460	.448	.468	48.47
13	62° 20′	53° 00′	.443	.451	.437	.443	.472	.467	.452	48.07
14	64° 14′	53° 37′	.517	.539	.546	.554	.544	.583	.547	50.48
15	66° 40′	55° 16′	.759	.711	.736	.795	.723	.683	.734	55.23
16	Godhavn*		.682	.656	.674	.511	.579	.549	.608	52.03
17	do		.631	.699	.763	.768	.813	.820	.749	55.61
18	do		.843	.873	.882	.903	.900	.908	.885	59.07
19	do		.955	.973	.945	.890	.848	.783	.899	59.17
20	do		.723	.676	.653	.664	.666	.684	.678	53.80
21	Ritenbenk		.728	.743	.708	.703	.713	.718	.719	54.85
22	do		.744	.736	.756	.749	.709	.666	.727	54.92
23	Off Proven		.699	.726	.746	.763	.746	.755	.739	55.36
24	Upernivik		.699	.646	.604	.614	.651	.666	.647	53.02
25	do		.686	.717	.751	.723	.673	.640	.698	54.31
26	do		.603	.561	.535	.517	.483	.428	.521	49.82
27	do		.422	.472	.558	.639	.684	.701	.579	51.29
28	do		.726	.751	.764	.724	.664	.619	.708	54.57
29	do		.605	.596	.617	.637	.594	.576	.604	51.93
30	75°	65°	.587	.607	.619	.644	.631	.669	.626	52.48
31	Off Cape York		.660	.629	.610	.585	.579	.557	.603	51.91
Aug. 1	Off Wostenholm Island		.564	.556	.532	.512	.486	.501	.525	49.92
2	Littleton Island		.480	.465	.517	.507	.500	.483	.492	49.08
3	Off Washington Irving Island		.515	.503	.457	.424	.417	.389	.451	48.05
4	Carl Ritter Bay		.308	.255	.233	.243	.337	.377	**.292**	**44.00**
5	Off Cape Baird		.412	.448	.476	.488	.517	.564	.484	48.88
6	Off Cape Lieber		.602	.650	.694	.728	.752	.749	**.696**	**54.36**
7	Off Cape Cracroft		.752	.729	.674	.649	.586	.567	.660	53.35

TEMPERATURE.

Date.	Latitude north.	Longitude west.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.	Daily means. Fahr.	Daily means. Centigrade.
1881.										
July 5								47.2	47.2	8.4
6				49.2		62.6		53.7	55.2	12.9
7	St. John's, Newfoundland			59.7	66.7	57.8	52.8	51.8	**57.8**	**14.3**
8	50° 32′	53° 05′	48.8	58.5	49.8	46.8	45.8	42.9	47.1	8.4
9	52° 37′	53° 15′	40.9	40.9	42.9	41.4	40.9	40.9	41.3	5.2
10	55° 00′	52° 53′	39.9	39.9	37.9	41.9	41.9	43.9	40.9	4.9
11	58° 08′	53° 52′	43.9	48.8	47.8	44.9	43.4	42.9	45.3	7.4
12	60° 48′	53° 46′	42.9	41.2	39.9	38.9	37.9	35.9	39.4	4.1
13	62° 20′	53° 00′	35.4	36.9	38.4	38.7	37.4	36.4	**37.2**	**2.9**
14	64° 14′	53° 37′	35.9	38.4	44.4	42.9	40.9	41.4	40.6	4.8
15	66° 40′	55° 16′	41.9	39.1	38.7	38.7	38.9	37.9	39.2	4.0
16	Godhavn*		35.9	41.9	41.7	40.9	46.4	43.9	41.8	5.4
17	do		43.9	40.7	41.9	40.9	40.4	39.4	41.2	5.1
18	do		41.2	41.9	42.9	42.7	41.9	39.9	41.8	5.4
19	do		39.9	40.9	45.9	49.8	47.4	45.3	44.9	7.2
20	do		45.8	48.9	56.1	46.8	42.9	41.9	47.1	8.4
21	Ritenbenk		40.9	43.9	44.9	42.9	42.9	41.4	42.8	6.0
22	do		40.9	43.7	46.9	47.3	42.9	40.9	43.8	6.6
23	Off Proven		39.7	40.9	43.2	42.9	40.9	40.9	41.4	5.2
24	Upernivik		41.7	45.9	54.6	47.9	42.4	44.1	46.1	7.8
25	do		44.9	45.9	47.4	48.9	48.9	44.4	46.7	8.2
26	do		49.8	45.4	46.9	44.9	45.8	44.2	46.2	7.9
27	do		42.7	42.4	41.9	50.3	42.9	37.9	43.0	6.1
28	do		37.9	41.0	49.8	60.2	49.4	45.9	47.4	8.6
29	do		44.9	47.9	51.8	49.6	41.9	38.9	45.8	7.7
30	75°	65°	36.9	39.9	46.8	42.9	37.7	36.7	41.5	5.3
31	Off Cape York		38.9	39.9	36.9	35.9	35.9	36.9	**37.2**	**2.9**
Aug. 1	Off Wostenholm Island		36.9	36.9	36.9	37.9	37.9	39.6	**37.7**	**3.2**
2	Littleton Island		38.9	38.4	36.9	40.9	48.7	38.9	**40.4**	**4.7**
3	Off Washington Irving Island		37.4	37.9	43.7	38.4	38.9	35.9	38.7	3.7
4	Carl Ritter Bay		35.9	39.4	41.4	45.4	38.2	32.9	38.9	3.8

* At 9 p. m.

TABLE CLXXIV.—*Pressure, temperature and humidity from St. John's, Newfoundland, to Fort Conger*—Continued.

RELATIVE HUMIDITY.

Date.	Position at noon. Latitude north.	Position at noon. Longitude west.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.	Daily means.
1881.									
July 5								89	89.0
6				93		79		81	84.3
7	St. John's, Newfoundland			76	57	75	79	79	**73.2**
8	50° 32′	53° 05′	85	78	82	84	76	83	81.3
9	52° 37′	53° 15′	98	98	91	98	95	95	95.8
10	55° 00′	52° 53′	95	98	98	98	98	98	**97.8**
11	58° 08′	53° 52′	96	96	92	92	98	98	95.3
12	60° 48′	53° 46′	98	96	91	95	95	90	94.2
13	62° 20′	53° 00′	95	95	95	93	95	95	94.7
14	64° 14′	53° 37′	100	100	84	91	98	95	94.7
15	66° 40′	55° 16′	91	95	86	93	91	95	91.8
16	Godhavn*		95	91	83	90	88	90	89.5
17	do		90	91	96	91	95	91	92.3
18	do		87	91	91	91	91	91	90.3
19	do		91	90	90	93	85	84	88.8
20	do		88	78	78	84	87	89	84.0
21	Ritenbenk		89	85	85	89	81	87	86.0
22	do		95	83	82	88	89	91	88.0
23	Off Proven		95	89	89	96	91	91	91.8
24	Upernivik		91	92	73	77	87	79	83.2
25	do		84	82	81	78	85	85	82.5
26	do		71	84	77	84	88	88	82.0
27	do		91	87	83	86	76	90	85.5
28	do		91	87	86	68	78	77	81.2
29	do		84	78	79	76	83	82	80.3
30	75°	65°	90	82	84	83	81	85	84.2
31	Off Cape York		86	82	81	90	90	85	85.7
Aug. 1	Off Wostenholm Island		90	90	90	86	90	82	88.0
2	Littleton Island		91	86	90	91	78	82	**86.3**
3	Off Washington Irving Island		90	90	84	86	91	90	**88.5**
4	Carl Ritter Bay		90	90	87	80	90	89	87.7

* At 9 p. m.

TABLE CLXXV.—*Wind, weather, and rainfall from St. John's, Newfoundland, to Fort Conger, Grinnell Land.*

Date.	Position at noon.		Wind.					
	Latitude north.	Longitude west.	3 a. m.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	11 p. m.
			Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.	Direction and velocity.
1881.								
July 5								
6				SE., gentle		SW., fresh		NW., fresh
7	St. John's, Newfoundland			W., fresh	SW., fresh	E., fresh	SW., gentle	NW., fresh
8	50° 32′	53° 05′	W., fresh	W., fresh	W., fresh	NW., fresh	NE., fresh	NW., brisk
9	52° 37′	53° 15′	NW., gale	NW., gale	NW., gale	NW., high	NW., brisk	NW., light
10	55° 00′	52° 53′	Calm	SE., fresh	SW., fresh	SE., fresh	SW., fresh	NE., fresh
11	58° 08′	53° 52′	NW., fresh	NW., fresh	N., fresh	N., fresh	NE., brisk	NE., brisk
12	60° 48′	53° 46′	N., fresh	NW., brisk	NW., brisk	NW., brisk	NW., brisk	N., brisk
13	62° 20′	53° 00′	NW., fresh	NW., fresh	NW., fresh	NW., fresh	NW., fresh	NW., light
14	64° 14′	53° 37′	NW., light	N., light	W., light	NW., light	NW., light	NW., fresh
15	66° 40′	55° 16′	N., fresh	N., fresh	NW., brisk	N., brisk	N., brisk	N., gentle
16	Godhavn*		NW., light	N., light	NW., fresh	NW., gentle	NW., light	NW., light
17	do		W., light	SE., light	S., light	S., light	S., light	SE., light
18	do		SW., fresh	SW., fresh	SW., fresh	SW., fresh	SW., light	Calm
19	do		SW., light	SW., light	SE., light	SW., light	SW., light	SE., light
20	do		E., fresh	SE., fresh	NW., fresh	W., fresh	NW., fresh	NW., fresh
21	Ritenbenk		NE., light	NE., light	W., gentle	Calm	SW., light	Calm
22	do		Calm	SE., light	SE., light	Calm	SW., gentle	SE., fresh
23	Off Proven		NW., fresh	N., light	Calm	N., light	NE., fresh	NE., fresh
24	Upernivik		SE., fresh	NE., fresh	SW., fresh	W., brisk	NW., brisk	W., high
25	do		SW., high	W., high	W., brisk	SW., brisk	SW., fresh	Calm
26	do		SE., brisk	SE., fresh	S., brisk	S., light	Calm	Calm
27	do		Calm	E., light	SW., gentle	SW., light	SW., light	SW., light
28	do		S., light	SE., gentle	SW., fresh	NE., light	NE., fresh	NE., fresh
29	do		Calm	Calm	Calm	Calm	N., fresh	N., fresh
30	75°	65°	N., fresh	NW., fresh	NW., fresh	NW., fresh	NW., fresh	NW., fresh
31	Off Cape York		NW., fresh	NE., light	E., light	NW., fresh	NW., fresh	NW., light
Aug. 1	Off Wostenholm Island		NW., light	SE., fresh	SW., fresh	SE., fresh	N., fresh	N., fresh
2	Littleton Island		N., fresh	N., brisk	NW., fresh	NE., fresh	N., fresh	N., fresh
3	Off Washington Irving Island		NW., fresh	Calm	SE., light	SE., light	N., light	NW., light
4	Carl Ritter Bay		Calm	Calm	NW., light	NE., fresh	N., fresh	NW., gentle

*At 9 p. m.

TABLE CLXXV.—*Wind, weather, and rainfall from St. John's, Newfoundland, to Fort Conger, Grinnell Land.*

Clouds and rainfall.														
3 a. m.	Precipitation.	7 a. m.	Precipitation.	11 a. m.	Precipitation.	3 p. m.	Precipitation.	7 p. m.	Precipitation.	11 p. m.	Precipitation.	Daily means, cloudiness.	Amount of precipitation.	Date.
													In.	
...	...	...	...	...	...	...	...	...	...	Fog. o	00	0.0	.00	5
...	...	...	...	...	...	1 cum. SW.^{r}	00	...	...	10 st. NW.	00	3.7	.00	6
...	...	5 cir. W.^{r}	00	o o	00	3 cum. NE.^{s}	00	Haze, 2 st. o	00	3 st. o	00	2.6	.00	7
o o	00	7 cir. W.^{s}	00	7 cum st. W.^{s}	00	10 nim. NW.^{s}	.—	10 st. o	00	o o	00	5.7	.—*	8
10 st. NW.^{r}	00	10 st. NW.^{r}	00	10 st. NW.^{r}	00	10 st. NW.^{r}	00	10 st. NW.		Fog. o	00	8.3	.00	9
Fog. o	00	10 st. o	00	10 st. o	00	10 st. o	00	10 st. o	00	10 st. NE.^{s}	00	8.3	.00	10
2 cir. o 5 cir. st. o	00 00	1 cir. W.^{s} 5 cum. st. o	00 00	10 cum. st. o	00	10 st. N.^{r}	00	10 nim. NE.^{r}	.—	10 st. NE.^{r}	00	8.8	.—*	11
8 cum. st. N.^{s}	00	10 st. o	00	10 st. o	00	10 st. o	00	10 st. NW.^{r}	00	10 nim. o	.—	9.7	.—*	12
10 nim. o	.—	10 st. NW.^{s}	00	10 st. NW.^{r}	00	10 st. o	00	10 st. o	00	Fog. o	00	8.3	.—*	13
Fog. o	00	Fog. o	00	Fog. o	00	Fog. o	00	o o	00	o o	00	0.0	.00	14
o o	00	Fog. o	00	10 st. NW.^{r}	00	10 st. N.^{r}	00	10 st. N.^{r}	00	10 st. N.^{s}	00	6.7	.00	15
Fog. o	00	Fog. o	00	Fog. o	00	Fog. o	00	Fog. o	00	Fog. o	00	0.0	.00	16
Fog. o	00	Fog. o	00	Fog. o	00	10 st. o	00	Fog. o	00	5 st. SE.^{s}	00	2.5	.00	17
10 st. o	00	10 cum. SW.^{s}	00	10 st. SW.	00	10 st. o	00	10 st. o	00	10 nim. o	.—	10.0	.—*	18
10 st. o	00	10 st. o	00	10 st. o	00	10 st. o	00	3 cir. NW.^{s}	00	3 cir. NW.	00	7.7	.00	19
10 st. o	00	5 cir. NW.^{s}	00	5 cum. W.^{s}	00	10 st. W.^{r}	00	10 nim. o	.—	10 st. o	00	8.3	.—*	20
10 st. o	00	10 st. o	00	10 st. W.^{s}	00	10 st. o	00	10 st. o	00	10 st. o	00	10.0	.00	21
10 st. o	00	10 st. o	00	10 st. SE.^{s}	00	10 st. o	00	10 nim. o	.—	10 nim. o	.—	10.0	.—*	22
10 st. o	00	10 st. o	00	Fog. o	00	Fog. o	00	10 st. o	00	10 nim. o	.—	6.7	.—*	23
10 nim. o	.—	10 nim. o	.—	10 st. SW.^{r}	00	10 st. W.^{r}	00	10 st. NW.^{r}	00	10 st. W.^{r}	00	10.0	.—*	24
10 nim. SW.^{r}	.—	10 nim. W.^{r}	.—	10 st. W.^{r}	00	10 nim. SW.^{r}	.—	10 nim. SW.^{r}	.—	10 nim. o	.—	10.0	.—*	25
10 st. SE.	00	10 nim. SE.^{r}	.—	10 st. S.^{r}	00	10 st. S.^{s}	00	10 st. o	00	10 st. o	00	10.0	.—*	26
10 st. o	00	10 nim. o	00	10 st. SW.^{s}	00	3 cir. SW.^{s} 6 cu.st. SW.^{s}	00 00	10 st. o	00	10 st. SW.^{s}	00	9.8	.00	27
10 st. o	00	7 st. o	00	5 cum. SW.^{s}	00	3 cir. o	00	10 cir. SW.^{s}	00	5 cir. SW.^{s}	00	6.7	.00	28
10 st. o	00	10 cir. W.^{s}	00	5 cir. W.^{s}	00	10 st. o	00	4 cir. NW. 3 st. o	00 00	o o	00	7.0	.00	29
o o	00	Fog. o	00	6 cir. o	00	Fog. NW.	00	10 st. NW.^{s}	00	10 st. o	00	4.3	.00	30
10 st. NW.^{s}	00	Fog, dense. o	00	10 nim. o	00	10 nim. o	00	Fog. o	00	Fog. o	00	5.0	.00	31
10 st. E.	00	10 st. o	00	10 st. o	00	10 st. SE.	00	10 st. o	00	10 nim. o	.—	10.0	.—*	1
10 st. o	00	10 st. o	00	Fog. o	00	6 cum.st.NE.	00	2 cir. N.^{s}	00	3 cir. N.^{s}	00	5.2	.00	2
5 cir. NW.^{s} 3 cir. st.	00 00	3 cir. o 6 cum. st. o	00 00	10 st. o	00	10 st. o	00	10 nim. o	.—	Dense fog. o	00	7.8	.—*	3
Dense fog. o	00	Dense fog. o	00	Fog. o	00	5 cum. NW.	00	10 cum. N.^{s}	00	10 st. NW.^{s}	00	4.2	.00	4

* Inappreciable.

TABLE CLXXVI.—*Sea temperatures on voyage from St. John's, Newfoundland, to Fort Conger, Grinnell Land.*

Washington mean time. Observations in degrees Fahrenheit.

Date.	Position at noon.	1 a.m.		2 a.m.		3 a.m.		4 a.m.		5 a.m.		6 a.m.		7 a.m.		8 a.m.		9 a.m.		10 a.m.		11 a.m.		Noon.		1 p.m.		2 p.m.	
		Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.
1881.																													
July 7	St. John's, Newfoundland																					62.7							
8	50° 32′ N. Lat., 53° 05′ W. Long.					43.7								43.2								44.7							
9	52° 37′ N. Lat., 53° 15′ W. Long.													39.7								38.7							
10	55° 00′ N. Lat., 52° 53′ W. Long.					38.7								37.7								34.7							
11	58° 08′ N. Lat., 53° 52′ W. Long.					43.7								43.7								44.7							
12	60° 48′ N. Lat., 53° 46′ W. Long.					42.7								41.2								40.7							
13	62° 20′ N. Lat., 53° 00′ W. Long.					34.7	33.7							37.7								38.2							
14	64° 14′ N. Lat., 53° 37′ W. Long.					37.0	37.0							37.7	35.7							36.2							
15	66° 40′ N. Lat., 55° 16′ W. Long.					39.7								37.7								38.7							
16	Godhavn					36.7								37.7								39.7							
17	......do					45.7								45.7								45.2							
18	......do					44.7	43.2							45.2	43.7							44.2	43.7						
19	......do					43.7	43.2							43.2	42.7							44.5	42.7						
20	......do					44.7	43.7							44.7	43.7							44.5	42.7						
21	Ritenbenk					44.7								45.3								42.7	38.7						
22	......do					42.2	40.2							40.2	38.7							44.0	42.7						
23	Off Proven					38.7								38.7								36.0							
24	Upernivik					36.2								36.7	36.7							36.7	36.5						
25	......do					36.2	35.7							35.7	35.0							36.0	35.2						
26	......do					35.7	35.0							35.7	34.7							35.7	35.0						
27	......do					36.2	35.7							36.2	35.7							36.7	35.7						
28	......do					36.7	36.7							36.7	36.7							39.7	38.7						
29	......do					38.9	38.0							38.7	37.7							38.7	38.0						
30	At 9 p.m., 75° N. 65° W					37.7								31.7						32.7		35.7		34.7		33.7		34.7	
31	At 9 p.m., off Cape York	36.7		36.7		36.7		36.2		36.2		36.4		36.7	*37.5	35.9	37.3	33.2	35.7	33.7	36.7	33.0	35.5	33.5	36.5	32.7	36.5	31.7	33.2
Means.																													
Aug. 1	Off Wostenholm	36.7	37.2	36.7	37.2	36.7	37.2	36.7	36.7	36.7		36.7		35.7		34.7	34.7	34.7		34.7		34.0		34.7		35.4		35.6	
2	Littleton Island	35.2		35.2		35.2		35.2		34.9		34.9		32.9		33.4		33.9		33.9		32.9		32.9	31.0	33.4	32.9	33.4	32.9
3	Off Washington Irving Island.	34.4		33.4		33.9		34.4		33.9		33.4		32.4		33.6		32.8	31.9	32.4	31.7	32.4	†30.9	33.2		32.4		31.4	
4	Carl Ritter Bay	32.4	31.4	32.4	[illegible]	32.4	31.4	32.6	31.4	32.4	31.4	32.4	31.1	30.4	30.1	32.4		32.4	31.9	32.4	31.9	32.4		32.4		33.4		33.4	‡31.4
5	Off Cape Baird	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.9	28.9	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2
6	Off Cape Lieber	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	28.9	29.4	28.9	30.2	29.2	29.7	29.2	30.4	29.2	30.9	29.2	30.9	29.2
7	Off Cape Cracroft	29.4	28.9	29.4	28.9	29.2	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	30.4	29.2	30.4	29.0	30.9	28.9	30.4	28.9	31.4	29.0	30.4	28.9
8	......do	29.4	28.9	29.4	[illegible]	29.4	28.9	29.9	29.0	29.9	29.0	29.9	29.0	29.4	28.9	29.3	29.3	29.9	29.9	29.4	28.9	29.4	[illegible]	29.4	29.0	29.4	29.9	29.4	29.4
9	......do	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4		29.4	29.2	29.4	29.2	29.4	29.2	29.7	29.4	29.4	29.4	29.4	29.4	29.4	29.2	29.4	29.2	29.4	29.2
10	North of Hans Island	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.9	29.4	29.9	29.3	29.9	29.4	29.4	29.2	29.9	29.2	29.9	29.2
11	Lady Franklin Bay.	29.4	29.0	29.7	29.2	29.9		29.9		29.9	29.2	29.9	29.2	29.2		29.2		29.9		29.9		29.4		29.4		29.3		29.4	
12	Fort Conger	29.9	29.3	29.9	29.3	29.4	29.4	29.4	29.3	29.4	29.3	29.4	[illegible]	29.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	31.4	29.4	29.4	29.3	[illegible]		29.4	
13	......do	33.4	30.4	33.4	29.4	33.4	29.9	33.4	29.4	32.9	29.4	33.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4	32.9	31.4	33.9	30.4	34.4	29.4	34.4	29.4	34.4	29.4
14	......do	32.4	29.4	31.9	29.4	32.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4	33.4	29.4	32.4	30.4	33.4	29.4	32.4	29.0	32.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4
15	......do	32.4	29.4	12.4	29.4	32.9	29.4	32.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4	33.0	29.9	33.0	29.9	32.9	29.9	33.4	29.4
16	......do	32.0	29.9	32.0	29.9	32.0	29.9	32.4	29.9	32.9	29.4	32.9	29.4	32.9	29.4	31.9	30.4					32.4	29.3	32.5	29.2	33.2	29.4	33.4	30.4
17	......do	32.9	29.4	32.9	29.4	32.9	29.4	32.9	29.4	32.9	29.4	32.9	29.4	31.4	29.4	31.4	29.4	32.4	30.4	32.4	31.3	32.4	29.4	32.4	29.4	32.4	29.4	32.4	29.4

* At 60 fathoms 35°.0. † At 30 fathoms 30°.7. ‡ At 42 fathoms 30°.4.

TABLE CLXXVI.—*Sea temperatures on voyage from St. John's, Newfoundland, to Fort Conger, Grinnell Land.*

Washington mean time. Observations in degrees Fahrenheit.

3 p. m.		4 p. m.		5 p. m.		6 p. m.		7 p. m.		8 p. m.		9 p. m.		10 p. m.		11 p. m.		Midnight.		Daily means		Maximum.		Minimum		Range.	
Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.	Surface.	30 feet.
47.7	...	...	...	...	...	...	...	49.7	...	...	...	...	...	...	...	46.7	...	...	...	51.7	...	62.7	...	46.7	...	16.0	...
40.7	...	...	...	...	...	...	...	40.7	...	...	...	...	...	...	...	40.7	...	...	...	42.3	...	44.7	...	40.7	...	4.0	...
38.7	...	...	...	...	...	...	...	39.2	...	...	...	...	...	...	...	38.7	...	...	...	39.0	...	39.7	...	38.7	...	1.0	...
40.7	...	...	...	...	...	...	...	43.7	...	...	...	...	...	...	...	43.7	...	...	...	39.9	...	43.7	...	34.7	...	9.0	...
43.7	...	...	...	...	...	...	...	45.0	...	...	...	...	...	...	...	42.7	...	...	...	43.9	...	45.0	...	42.7	...	2.3	...
38.7	...	...	...	...	...	...	...	39.7	...	...	...	...	...	...	...	34.7	33.7	...	...	39.6	33.7	40.7	33.7	31.7	33.7	6.0	0.0
34.2	...	...	...	...	...	...	...	38.0	...	...	...	...	...	...	...	37.7	37.7	...	...	36.8	35.7	38.2	37.7	34.2	33.7	4.0	4.0
39.7	...	...	...	...	...	...	...	36.7	...	...	...	...	...	...	...	38.7	...	...	...	37.7	36.4	39.7	37.0	36.2	35.7	3.5	1.3
39.7	...	...	...	...	...	...	...	37.7	...	...	...	...	...	...	...	38.7	...	...	...	38.7	...	39.7	...	37.7	...	2.0	...
38.2	...	...	...	...	...	...	...	43.2	...	...	...	...	...	...	...	46.0	...	...	...	40.2	...	46.0	...	36.7	...	9.3	...
46.0	43.7	...	...	...	...	...	...	43.7	43.7	...	...	...	...	...	...	44.2	43.7	...	...	45.1	43.7	49.0	43.7	43.7	43.7	2.3	0.0
43.7	43.2	...	...	...	...	...	...	43.7	43.2	...	...	...	...	...	...	43.7	43.2	...	...	44.2	43.4	45.2	43.7	43.7	43.2	1.5	0.5
44.7	43.7	...	...	...	...	...	...	44.7	43.7	...	...	...	...	...	...	43.7	42.2	...	...	44.1	43.0	44.7	43.7	43.2	42.7	1.5	1.0
43.7	42.7	...	...	...	...	...	...	43.7	43.7	...	...	...	...	...	...	43.7	42.7	...	...	44.2	43.2	44.7	43.7	43.7	42.7	1.0	1.0
43.2	40.7	...	...	...	...	...	...	41.7	40.7	...	...	...	...	...	...	42.2	40.2	...	...	43.3	40.1	45.3	40.7	41.7	38.7	3.6	2.0
39.7	...	...	...	...	...	...	...	39.7	...	...	...	...	...	...	...	39.7	...	...	...	40.9	40.5	44.0	42.7	39.7	38.7	4.3	4.0
37.7	...	...	...	...	...	...	...	37.7	...	...	...	...	...	...	...	36.2	...	...	...	37.3	...	38.7	...	35.0	...	3.7	...
36.7	35.7	...	...	...	...	...	...	36.2	35.7	...	...	...	...	...	...	36.2	35.7	...	...	36.4	36.1	36.7	36.7	36.2	35.7	0.5	1.0
35.7	34.7	...	...	...	...	...	...	35.7	35.0	...	...	...	...	...	...	35.7	35.2	...	...	35.8	35.1	35.7	35.7	34.7	34.7	1.0	1.0
35.7	35.7	...	...	...	...	...	...	36.2	35.7	...	...	...	...	...	...	36.2	35.7	...	...	35.9	35.3	36.7	35.7	35.7	34.7	0.5	1.0
37.7	35.7	...	...	...	...	...	...	*42.7	*41.7	...	...	...	...	...	...	36.7	36.7	...	...	37.7	36.9	42.7	41.7	36.2	33.7	6.5	6.0
39.7	38.2	...	...	...	...	...	...	39.7	38.7	...	...	...	...	...	...	38.7	38.0	...	...	38.5	37.8	39.7	38.7	36.7	36.7	3.0	2.0
39.7	39.4	...	...	...	...	...	...	38.5	38.2	...	...	...	...	...	...	37.7	...	...	...	38.7	38.3	39.2	39.4	37.7	37.7	2.0	1.7
36.7	...	34.7	...	32.7	...	32.7	...	33.5	...	34.7	...	34.7	...	35.2	...	36.7	...	36.2	...	†35.3	...	37.7	...	31.7	...	6.0	...
32.7	35.7	33.2	35.7	33.2	35.7	33.0	33.7	33.7	36.7	35.7	...	36.2	...	36.2	...	36.7	36.7	36.7	36.2	34.9	35.9	36.7	37.5	31.7	33.2	5.0	4.3
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	40.06	38.14	42.15	39.50	38.17	37.58	39.8	1.92
34.4	...	35.4	...	33.9	33.4	33.4	33.4	33.6	33.2	33.4	...	35.4	...	36.4	...	36.9	...	35.4	...	35.3	35.4	36.9	37.2	33.4	33.2	3.5	4.0
33.4	32.9	33.4	32.4	33.4	32.4	33.4	32.4	32.4	32.4	32.4	31.9	32.9	31.4	32.4	31.7	33.9	...	33.3	...	33.7	32.2	35.2	32.9	32.4	31.0	2.8	1.9
32.4	...	33.9	...	33.4	...	32.9	...	31.4	...	33.4	...	32.4	...	32.7	31.9	32.4	31.4	32.4	31.4	33.0	31.5	34.4	31.9	31.4	30.9	3.0	1.0
31.4	31.2	31.7	...	31.4	...	31.7	...	30.5	...	29.4	...	29.4	...	29.4	29.3	20.4	...	29.4	29.4	31.6	31.1	33.4	31.9	29.4	29.4	4.0	2.6
29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	29.4	28.9	28.9	28.9	29.4	29.0	29.9	29.2	28.9	28.9	1.0	0.3
31.4	29.4	30.9	29.0	30.9	28.9	30.9	28.9	30.9	28.9	29.9	28.9	29.9	28.9	29.4	28.9	29.4	28.9	29.2	28.9	29.8	29.0	31.4	29.4	28.9	28.9	2.5	0.5
30.9	29.2	28.9	...	29.4	...	29.4	...	29.4	...	29.4	29.4	29.4	28.9	29.4	29.4	29.4	29.2	29.4	29.2	29.7	29.0	31.4	29.4	28.9	28.9	2.5	0.5
29.4	29.4	29.4	29.4	30.4	29.4	29.9	29.4	31.0	29.4	30.4	29.4	29.7	29.4	31.7	29.4	29.2	...	29.4	29.4	29.8	29.2	31.7	29.4	29.3	28.9	2.4	0.5
29.9	...	30.4	29.2	29.4	29.2	29.4	29.2	29.4	29.2	29.8	29.2	29.8	29.2	29.9	29.0	29.4	29.2	29.4	29.2	29.5	29.2	30.4	29.4	29.4	29.0	1.0	0.4
29.4	29.3	29.3	29.3	29.4	29.3	29.6	29.2	29.3	29.3	29.2	29.4	29.2	29.1	29.5	29.7	30.4	29.3	29.7	29.1	29.5	29.3	30.4	29.7	29.2	29.1	1.2	0.6
30.9	29.4	30.9	29.4	29.4	29.2	29.6	29.2	29.4	29.3	31.6	29.4	31.9	30.2	29.9	29.3	29.9	29.3	29.9	29.3	29.9	29.3	31.6	30.2	29.2	29.0	2.4	1.2
33.7	29.4	34.4	29.4	34.8	29.9	33.4	29.9	34.4	30.4	33.4	30.4	34.4	29.4	33.4	29.4	34.4	29.4	34.4	29.9	31.5	29.5	34.8	30.4	29.4	29.2	5.4	1.2
34.6	29.4	33.4	29.4	32.9	29.4	32.4	29.4	33.4	29.4	33.4	29.4	32.4	29.4	32.9	29.4	32.4	29.4	32.4	29.4	33.2	29.6	34.6	31.4	32.4	29.4	2.2	2.0
32.2	29.4	34.4	29.4	33.9	29.9	33.9	29.4	32.4	29.4	32.9	29.4	32.9	29.4	32.2	29.4	32.2	29.4	32.4	29.4	32.7	29.5	33.9	30.4	31.9	29.4	2.0	1.0
33.2	29.4	34.3	29.4	33.2	29.4	33.2	29.4	33.2	29.4	32.9	29.4	33.4	29.4	32.4	29.4	32.4	29.4	32.0	29.9	32.8	29.5	34.3	29.9	32.0	29.4	2.3	0.5
34.0	29.4	33.9	29.8	33.9	29.4	33.2	29.4	32.3	29.3	32.4	30.4	32.9	29.4	32.9	29.4	32.4	29.4	32.4	29.4	32.8	29.6	34.0	30.4	32.0	29.2	2.0	1.2
32.1	29.4	33.1	29.4	32.9	29.4	32.9	29.4	32.9	30.4	32.4	29.4	32.4	29.4	32.4	29.9	32.4	29.9	31.4	29.2	32.5	29.6	33.1	31.3	31.4	29.4	1.7	1.9

*Probably 5° too high.

† Mean of 6 observations.

TABLE CLXXVII.—*Barometric readings (after leaving Fort Conger), corrected for temperature and elevation, in Kennedy Channel and Kane Sea.*

Date.	Position at noon.		1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
	Latitude north.	Longitude west.	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+
1883.																
Aug. 9			.895	.891	.883	.871	.870	.861	.851	.845	.840	.819	.821	.821	.820	
10	81° 32′	64° 30′														
11														1.010		1.040
12																
13																
14																
15											.690	.670	.680	.660	.660	.650
16	80° 44′	64° —′	.540	.540	.540	.510	.510	.500	.480	.460	.460	.400	.400	.400		.390
17	80 44	64 —	.380	.390	.400	.390	.390	.450	.450	.450	.450	.460	460	.460	.480	.490
18	80 44	64 —	.540	.550	.590	.590	.600	.640	.650		.660	.660	.660	.660	.660	.670
19	80 20	68 40					.680	.680	.690	.700		.710		.720		.740
20	80 17	69 00	.790	.820	.830	.830	.860	.870	.890	.890	.890		.920	.940	.940	.970
21	80 07	70 10		1.000	1.010	1.000	1.000	1.000	1.020		1.010			.930	.920	
22	80 05	70 30							.910		.910		.900	.900	.890	.890
23	79 55	70 40	.850	.850	.840	.840		.850	.850	.840						
24	79 50	71 00			.900							.920	.900	.890	.860	.860
25	79 46	71 —	.710	.700	.720	.720			.750				.790	.760	.760	.790
26	79 33	73 20					.840	.850	.850	.860	.880					
27	79 22	73 —								.840						
28	79 22	73 —	.750	.750	.730	.730	.740	.740	.740	.750	.760	.790	.790	.790	.750	.770
29	79 22	73 —	.910	.910	.910	.910	.950	.950		.940	.950	.950	.950	.930	.980	.980
30	79 22	73 —	.930	.950	.950	.950	.950	.950	.950	.950	.990	.970	.980	.980	.990	.990
31	79 22	73 —	.950	.960	.960	.970	.980	1.010		1.000	1.000	1.000	1.010	1.010	1.030	1.040
Sept. 1	79 19	73 45	1.020	1.020	1.010	1.010	1.010	1.010	1.000	.990	.980	.970		.950	.940	.940
2	79 19	73 45	.800	.810	.810	.810	.810	.820	.800	.780	.780	.780	.760	.750	.740	.740
3	79 16	74 —	.610	.610	.610	.600	.580	.590	.580	.570	.560	.550	.540	.530	.510	.500
4	79 13	74 20	.430	.410	.420	.430	.440	.450	.450	.440	.460	.450	.450	.460	.460	.470
5	79 10	74 42	.420	.430	.430	.410	.410	.410	.410	.410	.400	.380	.350	.340	.330	.320
6	79 07	74 45	.290	.300	.310	.290	.300	.290	.290	.280	.250	.240	.210	.230	.210	
7	79 07	74 45	.090	.090	.090	.100	.110	.140	.150	.180	.200	.200	.210	.240	.250	.250
8	79 07	74 45	.320	.330	.340	.380	.390	.390	.410	.430	.440	.450	.440	.450	.420	.450
9	79 07	74 45	.530	.520	.520	.550	.560	.580	.590	.600	.610	.640	.620	.640	.640	.640
10	79 07	74 45	.640	.640	.640	.640	.640	.640	.630	.620	.610	.590	.600	.570	.550	
11	78 50	74 45								.410					.410	.420
12										.590	.590	.600	.620	.630	.610	
13	Near Cape Sabine								.690							.690
14	do								.690							
15	do															
16	do											1.080		1.080	1.060	1.070
17	do												1.140	1.130		
18	do							.940								
19	do															
20	do											1.030		1.010	1.010	1.020
21	do										.520	.500	.500	.510		
22	do															
23	do										.890			.860		
24	do										.740		.740			.740
25	do											.830		.860		
26	78° 28′	75° 20′								.890		.850				
27	78 28	75 20														
28	78 28	75 20														
29	78 28	75 20														
30	78 30	75 20											1.135			1.093
Oct. 1	78 30	75 20									1.090					
2	78 30	75 20														
3	78 30	75 20														
4	78 30	75 20														
5	78 30	75 20									.720				.720	
6	78 30	75 20														.610
7	78 30	75 20									1.020					
8	78 30	75 20										1.150				
9	78 30	75 20									1.180					
10	78 30	75 20									1.310					
11	78 30	75 20						1.500								
12	78 48	74 40						1.430								
13	78 48	74 40														
14	78 46	74 20						.900								

TABLE CLXXVII.—*Barometric readings (after leaving Fort Conger), corrected for temperature and elevation, in Kennedy Channel and Kane Sea*—Continued.

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Daily means in *mm.*, 700+.	Date.
29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+	29.000+		1883.
										.8529	58.26	Aug. 9
.770					.780					.7750	56.27	10
1.020										**1.0233**	**62.57**	11
										.9260	*60.10*	12
										.8280	*57.61*	13
										.7200	*54.87*	14
.650	.620	.620	.610	.620	.620			.560	.550	.6329	52.67	15
.390	.360	.360	.350	.350		.350	.340	.340	.340	**.4232**	**47.33**	16
.500	.530	.540	.560	.560	.520	.560	.560	.560	.530	.4800	48.78	17
.680	.680	.680	.680	.680	.680					.6426	52.92	18
.740		.760			.750	.760	.760	.730	.690	.7221	54.92	19
	.980		.990	.990	.990	.980	.990	.990		.9175	59.90	20
				.900	.900	.860	.860	.870	.870	.9433	60.54	21
				.910	.900	.880	.880	.880	.860	.8925	59.24	22
										.8457	58.07	23
.850	.840							.740	.710	.8470	58.10	24
										.7444	55.48	25
										.8560	58.33	26
.820	.790				.830	.810	.790	.760	.740	.7975	56.85	27
.830	.840	.840	.850	.850	.850	.880	.880	.890	.900	.7996	56.91	28
.980	.950	.970	.970	.970	.960	.950	.950	.940	.930	.9473	60.64	29
.970	.970	.980	.970	.960	.950	.950	.940	.940	.940	.9604	60.97	30
1.040	1.040	1.060	1.040	1.050	1.040	1.040	1.040	1.020	1.020	1.0135	62.34	31
.920	.910	.900	.880	.880	.860	.850	.830	.820	.810	.9352	60.34	Sept. 1
.730	.730	.720	.700	.700	.690	.680	.640		.620	.7478	55.58	2
.490	.490	.490	.480	.470	.460	.450	.440	.430	.430	.5238	49.89	3
.480	.500	.500		.490	.500				.430	.4560	48.17	4
.350	.330	.310	.330	.330	.310	.300	.300	.280	.290	.3575	45.68	5
.210	.190	.180	.160	.160	.150	.130	.110	.110	.090	**.2165**	**42.07**	6
.280	.290	.290	.290	.290	.310	.320	.320	.320	.320	.2221	42.22	7
.430	.440	.450	.460	.480	.490	.500	.500	.500	.530	.4342	47.61	8
.650	.630	.630	.630	.640	.640	.650	.650	.650	.650	.6108	52.11	9
										.6162	52.23	10
										.4133	47.08	11
				.650						.6129	52.16	12
.690										.6900	54.11	13
			.810	.810			.830			.7850	56.53	14
				1.070						1.0700	63.76	15
	1.060				1.090					1.0733	63.84	16
										1.1350	**65.42**	17
										.9400	60.46	18
					.860					.8600	58.43	19
1.030										1.0200	62.49	20
.500										.5060	49.44	21
	.800									.8000	56.91	22
										.8750	58.81	23
										.7400	55.38	24
					.890					.8600	58.43	25
										.8700	58.68	26
										.9300	*60.21*	27
										.9900	*61.73*	28
										1.0600	*63.26*	29
										1.1140	64.88	30
			1.220							1.155	65.93	Oct. 1
										1.097	*64.45*	2
										1.039	*62.98*	3
		.980								.980	61.48	4
										.720	54.87	5
										.610	**52.08**	6
										1.020	62.49	7
1.120										1.135	65.42	8
		1.220								1.200	67.07	9
										1.310	69.86	10
										1.500	**74.69**	11
										1.430	72.91	12
										1.165	*66.18*	13
										.900	59.45	14

TABLE CLXXXIII.—*Temperature observations (after leaving Fort Conger) in Kennedy Channel and Kane Sea.*

Date.	Position at noon. Latitude north.	Position at noon. Longitude west.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.
1883.																
Aug. 9	Fort Conger		36.4	36.1	36.3	36.3	37.0	36.7	35.4	35.4	36.6	36.4	36.4	38.1	37.5	
10	Near Cape Baird															
11																
12																
13																
14			29.0												28.0	28.0
15				21.0							30.3	30.3	30.2	31.0	31.8	30.5
16	80° 44′	64° —′	26.0	27.3	28.0	28.9	28.9	28.5	28.0	27.5	28.0	27.6	27.0	27.2		27.5
17	80 44	64 —	26.0	26.0	26.2	26.2	26.2	27.2	28.0	28.0	32.3	28.4	26.2	29.5	30.0	29.8
18	80 44	64 —							29.0							
19	80 20	68 40					29.7	30.2	30.3	30.2		32.8				35.0
20	80 17	69 00	27.6	32.0	26.2	26.2			29.0					33.3	33.6	33.1
21	80 07	70 10		26.6	26.2	27.2	31.7	31.9	30.2		31.0			29.9	29.8	
22	80 05	70 30							33.0		33.0		33.5	35.5	31.5	32.7
23	79 55	70 40	31.2	31.0	31.8	33.2		33.0	34.3	39.3						
24	79 50	71 00			29.2							36.8	32.2	33.0	33.2	34.1
25	79 46	71 —	32.1	32.0	33.0	32.8			35.0				38.5	34.7	36.2	34.2
26	79 33	73 20					26.0	26.2	27.3	29.1	28.0					
27	79 22	73 —	21.0		19.5	20.5	19.8	19.9		24.8	26.2	24.6	27.6	28.0	28.2	29.1
28	79 22	73 —	14.2	16.0	19.0	20.6	21.0	23.2	24.1	27.0	29.2	29.5	27.5	30.0	31.2	29.0
29	79 22	73 —	24.0	24.0	25.0	26.0	26.5	28.7		29.3	31.2	31.0	31.8	33.0	33.1	30.8
30	79 22	73 —	12.0	11.8	13.2	14.6	14.5	16.2	17.0	18.1	23.0	24.5	26.0	27.0	28.5	28.8
31	79 22	73 —	23.5	25.0	26.0	26.0	26.2	26.5		28.2	28.6	30.0	30.8	31.9	31.8	32.8
Sept. 1	79 19	73 45	26.8	26.4	27.0	27.0	27.0	28.8	29.0	29.5	30.0	32.6		34 0	32.9	30.5
2	79 19	73 45	17.0	16.0	17.5	21.0	24.4	26.0	27.0	27.1	28.4	29.7	28.8	32.2	31.7	31.3
3	79 16	74 —	25.0	25.0	26.2	26.2	26.0	26.3	27.8	27.8	27.9	29.5	29.0	29.5	29.5	30.6
4	79 13	74 40	22.8	22.5	22.2	23.0	24.0	24.2	26.0	26.1	26.3	27.7	27.3	27.5	28.0	28.5
5	79 10	74 42	22.8	23.7	23.0	23.0	23.0	24.5	27.7	29.0	27.5	27.0	27.0	26.0	25.4	25.4
6	79 07	74 45	21.0	22.4	23.0	23.1	24.0	23.1	24.8	24.7	26.5	30.1	32.8	29.6	28.9	
7	79 07	74 45	22.0	25.0	25.0	24.5	24.0	23.0	22.5	21.6	22.8	23.0	23.0	22.5	23.5	22.0
8	79 07	74 45	1.0	1.0	6.2	4.0	10.0	11.0	12.0	11.0	12.5	11.0	9.8	9.3	14.1	15.3
9	79 07	74 45	13.2	13.2	13.6	14.6	15.1	16.3	17.5	15.5	15.0	15.2	16.0	17.8	17.5	17.8
10	79 07	74 45	13.5	13.5	13.5	13.5	13.0	13.7	13.9	13.0	13.2	14.8	13.8	14.0	14.0	
11	78 50	74 45								13.5					17.0	15.0
12										17.0	21.0	23.0	17.0	17.0	21.0	
13	Near Cape Sabine								9.0							16.8
14	do								18.5							
15	do															
16	do											17.0		19.5	20.0	19.8
17	do												14.8	15.0		
18	do							11.0								
19	do															
20	do											21.5		21.5	21.0	22.0
21	do										24.0	26.0	26.5	26.5		
22	do															
23	do										17.0			16.0		
24	do										16.5		16.5			16.8
25	do								10.5			12.5		12.5		
26	78° 28′	75° 20′								16.5		16.0	15.0			
27	78 28	75 20														
28	78 28	75 20														
29	78 28	75 20									16.8					
30	78 28	75 20											23.0			23.5
Oct. 1	78 30	75 20									25.0					
2	78 30	75 20											24.0			
3	78 30	75 20														
4	78 30	75 20														
5	78 30	75 20									17.0				16.0	
6	78 30	75 20											7.0			16.0
7	78 30	75 20									15.0					
8	78 30	75 20										14.0				
9	78 30	75 20									13.5					
10	78 30	75 20									12.0					
11	78 30	75 20						—3.0								
12	78 48	74 40						—8.5								
13	78 48	74 40														
14	78 46	74 20						9.0								
15	78 46	74 20						2.0								

TABLE CLXXVIII.—*Temperature observations* (*after leaving Fort Conger*) *in Kennedy Channel and Kane Sea*—Continued.

3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Daily means.	Minimum.	Daily means in centigrade.	Date.
													1883.
										36.5		**2.5**	Aug. 9
										35.7		*2.1*	10
										34.8		*1.6*	11
										33.9		*1.1*	12
			34.0							33.0*	32.0	0.6*	13
										28.3		— 2.1	14
29.8	28.0	28.0	28.5	28.5	28.5			27.0	26.0	28.6		— 1.9	15
27.2	27.0	27.9	28.0	27.0		27.4	27.0	26.3	26.5	27.5		— 2.5	16
32.0	30.5	30.1	29.5	28.5	29.0	28.5	28.2	27.8	25.2	28.3		— 2.1	17
										29.0		— 1.7	18
33.1	32.5	31.5			39.5	38.5	27.0	26.9	28.0	31.8		— 0.1	19
	31.9		31.0	29.4	28.8	26.2	24.6	24.5		29.2		— 0.6	20
				32.5	33.0	30.3	30.2	31.6	30.5	30.2		— 1.0	21
				33.0	33.9	35.0	32.8	32.0	33.4	33.3		0.7	22
										33.4		0.8	23
35.2	31.0							33.0	31.8	33.0		0.6	24
										34.3		1.3	25
								23.0	20.0	25.7		— 2.5	26
31.5	31.3	33.9	29.5		25.0	21.0	17.9	15.8	14.5	24.3		— 4.3	27
30.5	31.4	32.4	26.2	22.2	24.1	23.0	23.0	23.5	24.0	25.1*	12.5	— 3.8*	28
34.0	33.0	32.0	30.5	29.0	26.5	21.5	18.4	13.4	13.0	27.2		— 2.7	29
29.0	29.6	29.8	29.4	27.8	25.2	24.2	25.0	23.5	20.3	**22.5**		— **5.3**	30
31.0	32.0	31.0	29.2	29.5	29.0	28.8	28.0	26.9	26.9	28.7		— 0.7	31
30.2	28.6	27.8	26.2	25.1	23.0	21.3	19.0	18.5	18.5	26.9		— 2.8	Sept. 1
28.0	29.0	29.2	27.8	27.5	26.5	25.4	25.0		23.5	26.1		— 3.3	2
29.3	30.0	26.3	26.4	26.2	24.8	24.2	23.0	23.2	22.8	26.8		— 2.9	3
29.0	28.0	28.2		26.5	26.0				24.1	25.9		— 3.4	4
27.5	19.2	19.0	16.2	14.0	13.0	14.0	14.1	15.0	16.0	21.8		— 5.7	5
27.5	26.0	24.5	22.7	21.6	21.0	21.0	19.5	21.0	20.2	24.3		— 4.3	6
21.6	22.0	21.2	20.5	19.5	9.2	5.0	4.9	4.0	4.0	19.0		— 7.2	7
19.1	17.2	17.3	17.0	13.0	12.5	9.0	8.5	11.6	13.0	11.1*	— **0.8**	— 11.6*	8
18.0	16.1	16.3	16.0	15.3	14.9	14.5	14.0	14.0	13.7	15.5		— 9.2	9
										13.6		— 10.2	10
										15.2		— 9.3	11
				19.0						18.0*	9.0	— 7.8*	12
16.8										12.2*	6.0	— 11.0*	13
			26.0	26.0			26.0			22.1*	14.2	— 5.5*	14
				27.2						**27.2**		— **2.7**	15
	18.0				10.0					17.4		— 8.1	16
										10.9*	2.8	— 11.7*	17
										10.0*	9.0	— 12.2*	18
					23.0					23.0		— 5.0	19
	22.5									21.7		— 5.7	20
25.0										25.6		— 3.6	21
	10.8		8.0							**9.4**		—**12.6**	22
										13.7*	8.0	— 10.2*	23
										13.4*	4.0	— 10.3*	24
					11.2					11.1*	9.0	— 11.6*	25
										15.1*	13.0	— 9.4*	26
										16.1		— *8.8*	27
										16.4		— *8.7*	28
										16.8		— 8.4	29
										18.8*	10.0	— 7.3*	30
										22.2*	19.5	— 5.4*	Oct. 1
										24.0		— **4.4**	2
										16.4		— *8.7*	3
	8.0	9.7								8.8		— 12.9	4
	8.0									12.0*	7.0	— 11.1*	5
										8.7*	3.0	— 12.9*	6
										13.9*	12.8	— 10.1*	7
12.5										13.0*	12.5	— 10.6*	8
		5.2								7.6*	4.0	— 13.6*	9
										7.5*	3.0	— 13.6*	10
										— 5.0*	— 7.0	— 20.6*	11
										—10.5*	—12.5	**—23.6***	12
										3.0*	3.0	— 16.1*	13
										8.0*	7.0	— 13.3*	14
										0.2*	— 1.5	— 17.7*	15

* Minimum included in mean.

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay*, 1883.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
Fort Conger	Aug. 9, 1 a. m.	SE., 5 miles.		Cloudy	
	Aug. 9, 2 a. m.	E., 3 miles		do	
	Aug. 9, 3 a. m.	SE., 6 miles		do	
	Aug. 9, 4 a. m.	SE., 9 miles		do	
	Aug. 9, 5 a. m.	SE., 8 miles		do	
	Aug. 9, 6 a. m.	SE., 2 miles		do	
	Aug. 9, 7 a. m.	SE., 2 miles		do	
	Aug. 9, 8 a. m.	SW., 2 miles		do	
	Aug. 9, 9 a. m.	do		Heavy snow	
	Aug. 9, 10 a. m.	S., 6 miles		do	
	Aug. 9, 11 a. m.	SW., 4 miles		do	
	Aug. 9, 12 noon.	S., 4 miles		Cloudy	
	Aug. 9, 1 p. m.	S., gentle		do	
	Aug. 9, 2 p. m.				
Cape Baird	Aug. 10, 7 p. m.	NE., light		Cloudy	
	Aug. 10, 8 p. m.	E., light		do	
Cape Desfosses	Aug. 11				
Near Cape Back	Aug. 12				
80° 42′ N	Aug. 13				Snow from 12.45 a. m. till after 8 a. m.
80° 44′ N., 68° W	Aug. 14				Wind NE. since evening of 13th.
80° 44′ N., 68° W	Aug. 15, 9 a. m.	NE., brisk	S	Clear	
	Aug. 15, 10 a. m.	do	S	do	
	Aug. 15, 11 a. m.	do	S	Fair	
	Aug. 15, 12 noon.	do	S	do	
	Aug. 15, 1 p. m.	do	S	do	
	Aug. 15, 2 p. m.	do	S	do	
	Aug. 15, 3 p. m.	do	S	do	
	Aug. 15, 4 p. m.	do		do	
	Aug. 15, 5 p. m.	do	S^{r}	do	Low water at 2.40 p. m.; high water at 8.45 p. m.
	Aug. 15, 6 p. m.	do	S^{r}	Cloudy	
	Aug. 15, 7 p. m.	do	S^{r}	do	
	Aug. 15, 8 p. m.	do	S^{r}	do	
	Aug. 15, 11 p. m.	do	(?)	do	
	Aug. 15, 12 mdt.	do	S^{s}	do	
80° 44′ N., 68° W	Aug. 16, 1 a. m.	do	S^{s}	do	
	Aug. 16, 2 a. m.	do	S^{s}	do	
	Aug. 16, 3 a. m.	do	S^{s}	do	
	Aug. 16, 4 a. m.	N., brisk	S^{s}	do	
	Aug. 16, 5 a. m.	do	S^{s}	Snow	
	Aug. 16, 6 a. m.	NE., brisk	Quiet	do	
	Aug. 16, 7 a. m.	do	S^{s}	do	
	Aug. 16, 8 a. m.	do	Quiet	Cloudy	
	Aug. 16, 9 a. m.	do	Quiet	do	
	Aug. 16, 10 a. m.	do	Quiet	do	
	Aug. 16, 11 a. m.	do	Quiet	do	
	Aug. 16, 12 noon.	do	Quiet	do	
	Aug. 16, 1 p. m.				
	Aug. 16, 2 p. m.	NE., brisk	S^{s}	Cloudy	
	Aug. 16, 3 p. m.	do	S^{s}	do	
	Aug. 16, 4 p. m.	NE., high	Quiet	do	
	Aug. 16, 5 p. m.	do	Quiet	do	
	Aug. 16, 6 p. m.	NE., brisk	S^{s}	do	
	Aug. 16, 7 p. m.	do	S^{s}	do	
	Aug. 16, 8 p. m.				
	Aug. 16, 9 p. m.	NE., brisk		Cloudy	
	Aug. 16, 10 p. m.	do	S^{s}	do	
	Aug. 16, 11 p. m.	do	S^{s}	do	
	Aug. 16, 12 mdt.	do	S^{s}	do	
80° 44′ N., 68° W	Aug. 17, 1 a. m.	do	Quiet	Snow	
	Aug. 17, 2 a. m.	do	N^{s}	do	
	Aug. 17, 3 a. m.	do	N^{s}	do	
	Aug. 17, 4 a. m.	do	S^{s}	do	
	Aug. 17, 5 a. m.	do	S^{s}	do	
	Aug. 17, 6 a. m.	NE., fresh	S^{s}	do	
	Aug. 17, 7 a. m.	do	S^{s}	do	
	Aug. 17, 8 a. m.	E., light	S^{s}	Cloudy	
	Aug. 17, 9 a. m.	do		do	
	Aug. 17, 10 a. m.	do	S^{s}	Fair	
	Aug. 17, 11 a. m.	NW., light	S^{s}	Clear	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay,* 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
80° 44′ N., 68° W	Aug. 17, 12 noon.	NW., light	N^s	Cloudy	
	Aug. 17, 1 p. m.	NE., light	N^s	do	
	Aug. 17, 2 p. m.	do	N^s	do	
	Aug. 17, 3 p. m.	Calm	N^s	do	
	Aug. 17, 4 p. m.	NE., light	Quiet	do	
	Aug. 17, 5 p. m.	do	S^s	do	
	Aug. 17, 6 p. m.	do	S^s	Fair	
	Aug. 17, 7 p. m.	NE., fresh	S^s	Cloudy	
	Aug. 17, 8 p. m.	E., light	S^s	do	
	Aug. 17, 9 p. m.	do	S^s	do	
	Aug. 17, 10 p. m.	S., light	Quiet	do	
	Aug. 17, 11 p. m.	NE., light	N^s	do	
	Aug. 17, 12 mdt.	Calm	N	Clear	
80° 44′ N., 68° W	Aug. 18, 1 a. m.	SW., light	N	do	
	Aug. 18, 2 a. m.	do	N^r	Fair	
	Aug. 18, 3 a. m.	Calm	N^r	do	
	Aug. 18, 4 a. m.	S., light	N^r	do	
	Aug. 18, 5 a. m.	do	N^r	Snow	
	Aug. 18, 6 a. m.	SW., light	N^s	do	
	Aug. 18, 7 a. m.	do	N	do	
	Aug. 18, 9 a. m.	do	S^s	do	
	Aug. 18, 10 a. m.	SE., light	S^s	do	
	Aug. 18, 11 a. m.	Calm	N^s	do	
	Aug. 18, 12 noon.	do	N^s	do	
	Aug. 18, 1 p. m.	do	N^s	do	
	Aug. 18, 2 p. m.	SE., brisk	N^r	do	
	Aug. 18, 3 p. m.	do	N^r	do	Low water, 4.43 a. m.; high water, 4.55 p. m.
	Aug. 18, 4 p. m.	SW., brisk	N^r	do	
	Aug. 18, 5 p. m.	do	N^r	do	
	Aug. 18, 6 p. m.	SW., fresh	N	do	
	Aug. 18, 7 p. m.	E., light	N^s	do	
	Aug. 18, 8 p. m.	NW., light	S^s	do	
80° 44′ N., 68° W	Aug. 19, 5 a. m.	NE., light	Quiet	Cloudy	
	Aug. 19, 6 a. m.	Calm	Quiet	do	
	Aug. 19, 7 a. m.	NE., light	Quiet	do	
	Aug. 19, 8 a. m.	SE., liggt	Quiet	Fair	
	Aug. 19, 10 a. m.	SW., light	Quiet	do	
	Aug. 19, 12 noon.	NE., light	N^s	do	
	Aug. 19, 2 p. m.	SW., light	N^r	do	
	Aug. 19, 3 p. m.	do	N^r	do	
	Aug. 19, 4 p. m.				
	Aug. 19, 5 p. m.	SW	N^s	Cloudy	
	Aug. 19, 8 p. m.	SW., light	SW	do	Low water, 5.05 a. m.; high water, 11.30 p. m.
	Aug. 19, 9 p. m.	do	SW	do	
	Aug. 19, 10 p. m.	Calm	N	do	
	Aug. 19, 11 p. m.	do	N^r	Fair	
	Aug. 19, 12 mdt.	do	N^r	do	
80° 44′ N., 68° W	Aug. 20, 1 a. m.	do	N^r	Cloudy	
	Aug. 20, 2 a. m.	do	N^r	Foggy	High water, 12 noon; low water, 6.13 p.m.
	Aug. 20, 3 a. m.	W., light	N^r	Clear	
	Aug. 20, 4 a. m.	N., light	N^r	do	
	Aug. 20, 5 a. m.	SW., light	N^r	Fair	
	Aug. 20, 6 a. m.	do		do	
	Aug. 20, 7 a. m.	SW., fresh		do	
	Aug. 20, 8 a. m.	SW., brisk		do	
	Aug. 20, 9 a. m.	do		do	
	Aug. 20, 11 a. m.	SW., fresh		Cloudy	
	Aug. 20, 12 noon.	SW., light	N^s	do	
	Aug. 20, 1 p. m.	W., light	N^r	do	
	Aug. 20, 2 p. m.	do	N^s	Foggy	
	Aug. 20, 4 p. m.	do	N^s	do	
	Aug. 20, 6 p. m.	SW., light	N^s	Cloudy	
	Aug. 20, 7 p. m.	do	S^s	do	
	Aug. 20, 8 p. m.	do	S^s	do	
	Aug. 20, 9 p. m.	do	S^s	do	
	Aug. 20, 10 p. m.	do		Foggy	
	Aug. 20, 11 p. m.	do		do	
80° N., 71° W	Aug. 21, 2 a. m.	Calm	N^r	do	
	Aug. 21, 3 a. m.	SW., light	N^r	do	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay,* 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
80° N., 71° W	Aug. 21, 4 a. m.	Calm	N^r	Foggy	
	Aug. 21, 5 a. m.	do	N^r	Cloudy	
	Aug. 21, 6 a. m.	do	N^r	do	
	Aug. 21, 7 a. m.	NW., light	Quiet	do	
	Aug. 21, 9 a. m.	SW., light	SW	do	
	Aug 21, 12 noon.	do	SW^s	do	
	Aug. 21, 1 p. m.	SW., fresh	NE^r	do	
	Aug. 21, 7 p. m.	SW., light	NE^s	do	
	Aug. 21, 8 p. m.	do	NE^s	do	
	Aug. 21, 9 p. m.	W., fresh	SW^s	do	
	Aug. 21, 10 p. m.	SW., fresh	N	do	
	Aug. 21, 11 p. m.	SW	N	do	
	Aug. 21, 12 mdt.	do		do	
80° N., 71° W	Aug. 22, 9 a. m.	SE., fresh		do	
	Aug. 22, 11 a. m.	SW., brisk	NE	do	
	Aug. 22, 12 noon.	do	NE	do	
	Aug. 22, 1 p. m.	do	NE	do	
	Aug. 22, 2 p. m.	do	SW	do	
	Aug. 22, 7 p. m.	SW., light	NE^s	do	
	Aug. 22, 8 p. m.	do	NE^s	do	Low water, 7.35 p. m.
	Aug. 22, 9 p. m.	do	NE^s	do	
	Aug. 22, 10 p. m.	do	S^s	do	
	Aug. 22, 11 p. m.	do	S^s	do	
	Aug. 22, 12 mdt.	SW., fresh	S^s	do	
79° 51′ N	Aug. 23, 1 a. m.	do	N	Snow	High water, 1.45 a. m. and 2.15 p. m.
	Aug. 23, 2 a. m.	do	N^s	do	
	Aug. 23, 3 a. m.	do	N^s	do	
	Aug. 23, 4 a. m.	Calm	N^r	do	
	Aug. 23, 6 a. m.	S., fresh	N^r	do	
	Aug. 23, 7 a. m.	SW., light	N^s	do	
	Aug. 23, 8 a. m.	Calm	N	Cloudy	
79° 51′ N	Aug. 24, 3 a. m.	NE., light	NE	do	Low water, 8.40 a. m.
	Aug. 24, 10 a. m.	do	S^r	Snow	
	Aug. 24, 11 a. m.	N., light	S^r	do	
	Aug. 24, 12 noon.	Calm	S^r	do	
	Aug. 24, 1 p. m.	do	S^s	do	
	Aug. 24, 2 p. m.	do	S^s	do	
	Aug. 24, 3 p. m.	do	S^s	do	
	Aug. 24, 4 p. m.	SW., light	S^s	do	
	Aug. 24, 11 p. m.	NW., light	N	do	
	Aug. 24, 12 mdt.	do	N	Foggy	
Five miles west of Cape Louis Napoleon.	Aug. 25, 1 a. m.	SW., fresh	N^s	do	
	Aug. 25, 2 a. m.	SW., light	N^s	do	
	Aug. 25, 3 a. m.	W., light	N^s	do	
	Aug. 25, 4 a. m.	SW., light	N^s	do	High water, 3.35 a. m.
	Aug. 25, 7 a. m.	SW., fresh	NE^s	do	
	Aug. 25, 11 a. m.	do	N^s	do	
	Aug. 25, 12 noon.	do	N^s	do	
	Aug. 25, 1 p. m.	SW., light	N^s	do	
	Aug. 25, 2 p. m.	SW., fresh	N^s	do	
Cape Louis Napoleon	Aug. 26, 5 a. m.	do	N^s	do	
	Aug. 26, 6 a. m.	SW., light	N^s	do	
	Aug. 26, 7 a. m.	do	N^s	do	
	Aug. 26, 8 a. m.	NE., light	N^s	do	
	Aug. 26, 9 a. m.	do		do	
	Aug. 26, 11 p. m.	SW., fresh	S^s	Fair	
	Aug. 26, 12 mdt.	SW., light	NE	do	
79° 22′ N., 73° W	Aug. 27, 1 a. m.	do	NE	do	
	Aug. 27, 3 a. m.	do	S	do	
	Aug. 27, 4 a. m.	NW., light		Clear	
	Aug. 27, 5 a. m.	do	S	do	
	Aug. 27, 6 a. m.	do	S	do	
	Aug. 27, 8 a. m.	N., light		do	
	Aug. 27, 9 a. m.	NE., light		Foggy	
	Aug. 27, 10 a. m.	do		do	
	Aug. 27, 11 a. m.	Calm		do	
	Aug. 27, 12 noon.	N., light		do	
	Aug. 27, 1 p. m.	Calm		do	
	Aug. 27, 2 p. m.	do		do	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay,* 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
79° 22′ N., 73° W	Aug. 27, 3 p. m.	SW., light		Foggy	
	Aug. 27, 4 p. m.	Calm		do	
	Aug. 27, 5 p. m.	do			
	Aug. 27, 6 p. m.	SW		Fair	
	Aug. 27, 8 p. m.	Calm		Clear	
	Aug. 27, 9 p. m.	do		do	
	Aug. 27, 10 p. m.	NW., light		do	
	Aug. 27, 11 p. m.	Calm		do	
	Aug. 27, 12 mdt.	SW., light		do	
79° 23′ N., 73° 15′ W	Aug. 28, 1 a. m.	NW., light		do	
	Aug. 28, 2 a. m.	do		do	
	Aug. 28, 3 a. m.	Calm		Cloudy	
	Aug. 28, 4 a. m.	do		do	
	Aug. 28, 5 a. m.	do		do	
	Aug. 28, 6 a. m.	S., light		do	
	Aug. 28, 7 a. m.	Calm		do	
	Aug. 28, 8 a. m.	do		do	
	Aug. 28, 9 a. m.	do		do	
	Aug. 28, 10 a. m.	do		Fair	
	Aug. 28, 11 a. m.	do		Cloudy	
	Aug. 28, 12 noon.	do		Fair	
	Aug. 28, 1 p. m.	do		Clear	
	Aug. 28, 2 p. m.	do		do	
	Aug. 28, 3 p. m.	do		do	
	Aug. 28, 4 p. m.	W., light		Fair	
	Aug. 28, 5 p. m.	Calm		do	
	Aug. 28, 6 p. m.	do		Clear	
	Aug. 28, 7 p. m.	E., light		Fair	
	Aug. 28, 8 p. m.	Calm		do	
	Aug. 28, 9 p. m.	do		Cloudy	
	Aug. 28, 10 p. m.	do		do	
	Aug. 28, 11 p. m.	do		do	
	Aug. 28, 12 mdt.	do		do	
79° 23′ N., 73° 15′ W	Aug. 29, 1 a. m.	W., light		do	
	Aug. 29, 2 a. m.	N., light		do	
	Aug. 29, 3 a. m.	Calm		do	
	Aug. 29, 4 a. m.	do		do	
	Aug. 29, 5 a. m.	do		do	
	Aug. 29, 6 a. m.	do		do	
	Aug. 29, 8 a. m.	do		do	
	Aug. 29, 9 a. m.	do		do	
	Aug. 29, 10 a. m.	W., light		do	
	Aug. 29, 11 a. m.	do		do	
	Aug. 29, 12 noon.	SW., light		do	
	Aug. 29, 1 p. m.	Calm		do	
	Aug. 29, 2 p. m.	SW., light		do	
	Aug. 29, 3 p. m.	Calm		do	
	Aug. 29, 4 p. m.	SW., light		do	
	Aug. 29, 5 p. m.	do		do	
	Aug. 29, 6 p. m.	Calm		Fair	
	Aug. 29, 7 p. m.	do		do	
	Aug. 29, 8 p. m.	do		do	
	Aug. 29, 9 p. m.	do		do	
	Aug. 29, 10 p. m.	do		do	
	Aug. 29, 11 p. m.	do		Clear	
	Aug. 29, 12 mdt.	do		do	
79° 22′ N., 73° 10′ W	Aug. 30, 1 a. m.	do		do	
	Aug. 30, 2 a. m.	do		do	
	Aug. 30, 3 a. m.	do		do	
	Aug. 30, 4 a. m.	S., light		do	
	Aug. 30, 5 a. m.	Calm		Fair	
	Aug. 30, 6 a. m.	do		do	
	Aug. 30, 7 a. m.	do		Clear	
	Aug. 30, 8 a. m.	do		do	
	Aug. 30, 9 a. m.	SW., light		Fair	
	Aug. 30, 10 a. m.	do		do	
	Aug. 30, 11 a. m.	do		Clear	
	Aug. 30, 12 noon.	Calm		do	
	Aug. 30, 1 p. m.	do		do	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay,* 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
79° 22′ N., 73° 10′ W	Aug. 30, 2 p. m.	Calm		Clear	
	Aug. 30, 3 p. m.	do		Fair	
	Aug. 30, 4 p. m.	do		do	
	Aug. 30, 5 p. m.	do		do	
	Aug. 30, 6 p. m.	do		do	
	Aug. 30, 7 p. m.	do		Cloudy	
	Aug. 30, 8 p. m.	S., light		do	
	Aug. 30, 9 p. m.	do		do	
	Aug. 30, 10 p. m.	SE., light		do	
	Aug. 30, 11 p. m.	S., light		do	
	Aug. 30, 12 mdt.	do		do	
79° 22′ N., 73° 30′ W	Aug. 31, 1 a. m.	SW., light		do	
	Aug. 31, 2 a. m.	NE., gentle		do	
	Aug. 31, 3 a. m.	NE., light		do	
	Aug. 31, 4 a. m.	do		do	
	Aug. 31, 5 a. m.	do		do	
	Aug. 31, 6 a. m.	do		do	
	Aug. 31, 8 a. m.	do		Light snow	
	Aug. 31, 9 a. m.	do		do	
	Aug. 31, 10 a. m.	do		do	
	Aug. 31, 11 a. m.	do		do	
	Aug. 31, 12 noon.	do		do	
	Aug. 31, 1 p. m.	do		do	
	Aug. 31, 2 p. m.	do		do	
	Aug. 31, 3 p. m.	do		Cloudy	
	Aug. 31, 4 p. m.	N., light		do	
	Aug. 31, 5 p. m.	Calm		do	
	Aug. 31, 6 p. m.	N., light		do	
	Aug. 31, 7 p. m.	NW., light		do	
	Aug. 31, 8 p. m.	Calm		do	
	Aug. 31, 9 p. m.	do		do	
	Aug. 31, 10 p. m.	do		do	
	Aug. 31, 11 p. m.	W., light		do	
	Aug. 31, 12 mdt.	Calm		do	
79° 19′ N., 73° 45′ W	Sept. 1, 1 a. m.	do		do	
	Sept. 1, 2 a. m.	SW., light		do	
	Sept. 1, 3 a. m.	Calm		do	
	Sept. 1, 4 a. m.	do		do	
	Sept. 1, 5 a. m.	do		do	
	Sept. 1, 6 a. m.	do		do	
	Sept. 1, 7 a. m.	do		do	
	Sept. 1, 8 a. m.	W., light		do	
	Sept. 1, 9 a. m.	NW., light		do	
	Sept. 1, 10 a. m.	Calm		do	
	Sept. 1, 11 a. m.				
	Sept. 1, 12 noon.	Calm		Cloudy	
	Sept. 1, 1 p. m.	do		do	
	Sept. 1, 2 p. m.	do		do	
	Sept. 1, 3 p. m.	do		do	
	Sept. 1, 4 p. m.	do		Clear	
	Sept. 1, 5 p. m.	do		do	
	Sept. 1, 6 p. m.	do		Foggy	
	Sept. 1, 7 p. m.	do		do	
	Sept. 1, 8 p. m.	do		do	
	Sept. 1, 9 p. m.	do		do	
	Sept. 1, 10 p. m.	NW., gentle		do	
	Sept. 1, 11 p. m.	Calm		do	
	Sept. 1, 12 mdt.	W., light		do	
79° 19′ N., 73° 45′ W	Sept. 2, 1 a. m.	do		Light fog; cloudy	
	Sept. 2, 2 a. m.	NW., light		do	
	Sept. 2, 3 a. m.	Calm		Cloudy	
	Sept. 2, 4 a. m.	do		do	
	Sept. 2, 5 a. m.	do		do	
	Sept. 2, 6 a. m.	do		do	
	Sept. 2, 7 a. m.	W., light		do	
	Sept. 2, 8 a. m.	Calm		do	
	Sept. 2, 9 a. m.	SE., light		do	
	Sept. 2, 10 a. m.	do		do	
	Sept. 2, 11 a. m.	Calm		do	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay*, 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
79° 19′ N., 73° 45′ W	Sept. 2, 12 noon.	Calm		Cloudy	
	Sept. 2, 1 p. m.	SW., light		do	
	Sept. 2, 2 p. m.	do		do	
	Sept. 2, 3 p. m.	W., light		do	
	Sept. 2, 4 p. m.	do		do	
	Sept. 2, 5 p. m.	SW., light		do	
	Sept. 2, 6 p. m.	SW., gentle		do	
	Sept. 2, 7 p. m.	SE		do	
	Sept. 2, 8 p. m.	do		do	
	Sept. 2, 9 p. m.	do		do	
	Sept. 2, 10 p. m.	SE., light		do	
	Sept. 2, 12 mdt.	E., light		do	
79° 15′ N., 74° W	Sept. 3, 1 a. m.	SE., light		do	
	Sept. 3, 2 a. m.	do		do	
	Sept. 3, 3 a. m.	do		do	
	Sept. 3, 4 a. m.	do		do	
	Sept. 3, 5 a. m.	Calm		do	
	Sept. 3, 6 a. m.	do		do	
	Sept. 3, 7 a. m.	do		do	
	Sept. 3, 8 a. m.	do		do	
	Sept. 3, 9 a. m.	NE., light		do	
	Sept. 3, 10 a. m.	Calm		do	
	Sept. 3, 11 a. m.	do		do	
	Sept. 3, 12 noon.	NE., light		do	
	Sept. 3, 1 p. m.	Calm		do	
	Sept. 3, 2 p. m.	do		do	
	Sept. 3, 3 p. m.	do		Fair	
	Sept. 3, 4 p. m.	do		Cloudy	
	Sept. 3, 5 p. m.	do		do	
	Sept. 3, 6 p. m.	N., light		do	
	Sept. 3, 7 p. m.	Calm		do	
	Sept. 3, 8 p. m.	NE., light		Foggy	
	Sept. 3, 9 p. m.	do		do	
	Sept. 3, 10 p. m.	Calm		do	
	Sept. 2, 11 p. m.	do		do	
	Sept. 3, 12 mdt.	do		do	
79° 15′ N., 74° W	Sept. 4, 1 a. m.	do		do	
	Sept. 4, 2 a. m.	do		do	
	Sept. 4, 3 a. m.	do		Cloudy	
	Sept. 4, 4 a. m.	do		do	
	Sept. 4, 5 a. m.	do		do	
	Sept. 4, 6 a. m.	do		do	
	Sept. 4, 7 a. m.	do		do	
	Sept. 4, 8 a. m.	W., light		do	
	Sept. 4, 9 a. m.	Calm		do	
	Sept. 4, 10 a. m.	do		do	
	Sept. 4, 11 a. m.	do		do	
	Sept. 4, 12 noon.	SW., light		do	
	Sept. 4, 1 p. m.	do		do	
	Sept. 4, 2 p. m.	do		Light snow	
	Sept. 4, 3 p. m.	Calm		do	
	Sept. 4, 4 p. m.	do		do	
	Sept. 4, 5 p. m.	do		do	
	Sept. 4, 7 p. m.	do		do	
	Sept. 4, 8 p. m.	do		do	
	Sept. 4, 12 mdt.	do		Cloudy	
79° 6′ N., 74° W	Sept. 5, 1 a. m.	NW., light		Light snow	
	Sept. 5, 2 a. m.	do		Cloudy	
	Sept. 5, 3 a. m.	Calm		do	
	Sept. 5, 4 a. m.	do		do	
	Sept. 5, 5 a. m.	NW., light		do	
	Sept. 5, 6 a. m.	do		do	
	Sept. 5, 7 a. m.	do		do	
	Sept. 5, 8 a. m.	do		Fair	
	Sept. 5, 9 a. m.	do		do	
	Sept. 5, 10 a. m.	N., light		do	
	Sept. 5, 11 a. m.	Calm		Clear	
	Sept. 5, 12 noon.	do		do	
	Sept. 5, 1 p. m.	do		do	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay*, 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
79° 6′ N., 74° W	Sept. 5, 2 p. m.	SW., light		Clear	
	Sept. 5, 3 p. m.	W., light		do	
	Sept. 5, 4 p. m.	SW., light		do	
	Sept. 5, 5 p. m.	S., light		do	
	Sept. 5, 6 p. m.	SW., light		do	
	Sept. 5, 7 p. m.	do		do	
	Sept. 5, 8 p. m.	do		do	
	Sept. 5, 9 p. m.	SW., fresh		do	
	Sept. 5, 10 p. m.	SW., light		do	
	Sept. 5, 11 p. m.	SW., fresh		do	
	Sept. 5, 12 mdt.	do		do	
79° N., 74° 45′ W	Sept. 6, 1 a. m.	do		Cloudy	
	Sept. 6, 2 a. m.	do		do	
	Sept. 6, 3 a. m.	N., light		Light snow	
	Sept. 6, 4 a. m.	Calm		do	
	Sept. 6, 5 a. m.	do		do	
	Sept. 6, 6 a. m.	SE., light		do	
	Sept. 6, 7 a. m.	do		Cloudy	
	Sept. 6, 8 a. m.	SW., light		do	
	Sept. 6, 9 a. m.	do		do	
	Sept. 6, 10 a. m.	Calm		do	
	Sept. 6, 11 a. m.	do		Fair	
	Sept. 6, 12 noon.	NE., fresh		Cloudy	
	Sept. 6, 1 p. m.	NE., light		do	
	Sept. 6, 2 p. m.				
	Sept. 6, 3 p. m.	N		Cloudy	
	Sept. 6, 4 p. m.	do		do	
	Sept. 6, 5 p. m.	NW., fresh		do	
	Sept. 6, 6 p. m.	N., fresh		do	
	Sept. 6, 7 p. m.	do		do	
	Sept. 6, 8 p. m.	NW., fresh		do	
	Sept. 6, 9 p. m.	do		do	
	Sept. 6, 10 p. m.	do		do	
	Sept. 6, 11 p. m.	do		Light snow	
	Sept. 6, 12 mdt.	NW., gale			
79° N., 74° 45′ W	Sept. 7, 1 a. m.	do		Light snow	
	Sept. 7, 2 a. m.	NW., high		do	
	Sept. 7, 3 a. m.	NE., high		Cloudy	
	Sept. 7, 4 a. m.	do		Light snow	
	Sept. 7, 5 a. m.	do		Cloudy	
	Sept. 7, 6 a. m.	do		do	
	Sept. 7, 7 a. m.	do		do	
	Sept. 7, 8 a. m.	do		do	
	Sept. 7, 9 a. m.	do		Fair	
	Sept. 7, 10 a. m.	do		do	
	Sept. 7, 11 a. m.	do		do	
	Sept. 7, 12 noon.	N., brisk		Cloudy	
	Sept. 7, 1 p. m.	do		Fair	
	Sept. 7, 2 p. m.	N., fresh		do	
	Sept. 7, 3 p. m.	N., gentle		do	
	Sept. 7, 4 p. m.	N., light		do	
	Sept. 7, 5 p. m.	NE., fresh		do	
	Sept. 7, 6 p. m.	Calm		do	
	Sept. 7, 7 p. m.	do		do	
	Sept. 7, 8 p. m.	SE., light		Clear	
	Sept. 7, 9 p. m.	Calm		do	
	Sept. 7, 10 p. m.	do		do	
	Sept. 7, 11 p. m.	do		do	
	Sept. 7, 12 mdt.	SW., light		do	
79° N., 74° 45′ W	Sept. 8, 1 a. m.	Calm		do	
	Sept. 8, 2 a. m.	SW., light		do	
	Sept. 8, 3 a. m.	do		do	
	Sept. 8, 4 a. m.	Calm		do	
	Sept. 8, 5 a. m.	do		do	
	Sept. 8, 6 a. m.	SW., light		do	
	Sept. 8, 7 a. m.	NE., light		do	
	Sept. 8, 8 a. m.	do		do	
	Sept. 8, 9 a. m.	do		do	
	Sept. 8, 10 a. m.	Calm		do	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay*, 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
79° N., 74° 45′ W	Sept. 8, 11 a. m.	Calm		Clear	
	Sept. 8, 12 noon.	do		do	
	Sept. 8, 1 p. m.	do		do	
	Sept. 8, 2 p. m.	do		Fair	
	Sept. 8, 3 p. m.	do		do	
	Sept. 8, 4 p. m.	NW., light		Cloudy	
	Sept. 8, 5 p. m.	do		do	
	Sept. 8, 6 p. m.	Calm		do	
	Sept. 8, 7 p. m.	do		do	
	Sept. 8, 8 p. m.	do		do	
	Sept. 8, 9 p. m.	NW., light		Fair	
	Sept. 8, 10 p. m.	do		do	
	Sept. 8, 11 p. m.	Calm		Cloudy	
	Sept. 8, 12 mdt.	NW., light		do	
79° N., 74° 45′ W	Sept. 9, 1 a. m.	Calm		Cloudy	
	Sept. 9, 2 a. m.	NW., light		do	
	Sept. 9, 3 a. m.	SE., light		Light snow	
	Sept. 9, 4 a. m.	Calm		do	
	Sept. 9, 5 a. m.	N., light		do	
	Sept. 9, 6 a. m.	N., gentle		do	
	Sept. 9, 7 a. m.	NE., gentle		do	
	Sept. 9, 8 a. m.	NW., fresh		do	
	Sept. 9, 9 a. m.	do		do	
	Sept. 9, 10 a. m.	do		do	
	Sept. 9, 11 a. m.	do		do	
	Sept. 9, 12 noon.	NW., brisk		do	
	Sept. 9, 1 p. m.	do		do	
	Sept. 9, 2 p. m.	do		do	
	Sept. 9, 3 p. m.	do		do	
	Sept. 9, 4 p. m.	NW., fresh		do	
	Sept. 9, 5 p. m.	NW., light		do	
	Sept. 9, 6 p. m.	do		do	
	Sept. 9, 7 p. m.	do		do	
	Sept, 9, 8 p. m.	N., gentle		do	
	Sept. 9, 9 p. m.	NE., gentle		do	
	Sept. 9, 10 p. m.	N., gentle		do	
	Sept. 9, 11 p. m.	do		do	
	Sept. 9, 12 mdt.	NW., fresh		do	
79° N., 74° 45′ W	Sept. 10, 1 a. m.	do		do	
	Sept. 10, 2 a. m.	NW., light		do	
	Sept. 10, 3 a. m.	do		do	
	Sept. 10, 4 a. m.	do		do	
	Sept. 10, 5 a. m.	do		do	
	Sept. 10, 6 a. m.	do		do	
	Sept. 10, 7 a. m.	do		do	
	Sept. 10, 8 a. m.	do		do	
	Sept. 10, 9 a. m.	do		do	
	Sept. 10, 10 a. m.	N., fresh		Heavy snow	
	Sept. 10, 11 a. m.	NW., fresh		Light snow	
	Sept. 10, 12 noon.	do		do	
	Sept. 10, 1 p. m.	do		do	
78° 50′ N., 74° 45′ W	Sept. 11, 8 a. m.	N., fresh		do	
	Sept. 11, 1 p. m.	W., light		do	
	Sept. 11, 2 p. m.	SW., light		do	
78° 58′ N., 73° 45′ W	Sept. 12, 8 a. m.	N., light		Cloudy	
	Sept. 12, 9 a. m.	do		do	
	Sept. 12, 10 a. m.	Calm		do	
	Sept. 12, 11 a. m.	NW., light		Fair	
	Sept. 12, 12 noon.	Calm		Cloudy	
	Sept. 12, 1 p. m.	NW., fresh		do	
	Sept. 12, 7 p. m.	NW., light		do	
78° 56′ N	Sept. 13, 7 a. m.	do		Fair	
	Sept. 13, 2 p. m.	NE., light		Cloudy	
	Sept. 13, 3 p. m.	do		do	
78° 55′ N	Sept. 14, 7 a. m.	NW., gentle		do	
	Sept. 14, 11 a. m.	SE., light		Fair	
	Sept. 14, 1 p. m.	NE., light		Light snow	
	Sept. 14, 6 p. m.	SW., high		Cloudy	
	Sept. 14, 7 p. m.	SW., brisk		do	

TABLE CLXXIX.—*Wind, weather, tides, &c., Fort Conger to Camp Clay*, 1883—Continued.

Position.	Date.	Wind.	Movement of ice pack.	Weather.	Remarks.
78° 55′ N	Sept. 14, 10 p. m.	NE., high		Light snow	
79° 01′ N	Sept. 15, 7 p. m.	S., light		Cloudy	
79° N	Sept. 16, 10 a. m.	Calm		Fair	
	Sept. 16, 12 noon.	do		do	
	Sept. 16, 1 p. m.	do		do	
	Sept. 16, 2 p. m.	SW., light		do	
	Sept. 16, 4 p. m.	Calm		Clear	
	Sept. 16, 8 p. m.	do		do	
Near Cape Sabine	Sept. 17, 11 a. m.	SW., light		do	
	Sept. 17, 12 noon	Calm		do	
Near Cape Sabine	Sept. 18, 6 a. m.	NW., gentle		do	
Near Cape Sabine	Sept. 19, 8 p. m.	SW., fresh		Fair	
Near Cape Sabine	Sept. 20, 10 a. m.	NW., fresh		Light fog; cloudy	
	Sept. 20, 12 noon.	N., fresh		Cloudy	
	Sept. 20, 1 p. m.	do		Foggy	
	Sept. 20, 2 p. m.	do		do	
	Sept. 20, 4 p. m.	do		do	
Near Cape Sabine	Sept. 21, 9 a. m.	Calm		Light snow	
	Sept. 21, 10 a. m.	do		do	
	Sept. 21, 11 a. m.	SE., light		do	
	Sept. 21, 12 noon.	E., light		do	
	Sept. 21, 3 p. m.	Calm		do	
Near Cape Sabine	Sept. 22, 4 p. m.	N., light		Cloudy	
Near Cape Sabine	Sept. 23, 12 noon.	NE., fresh		Light snow	
Near Cape Sabine	Sept. 24, 9 a. m.	NW., light		Cloudy	
	Sept. 24, 11 a. m.	do		do	
	Sept. 24, 2 p. m.	do		do	
Near Cape Sabine	Sept. 25, 10 a. m.	NE., brisk		do	
	Sept. 25, 12 noon.	do		do	
	Sept. 25, 8 p. m.	NE., high		do	
78° 28′ N., 75° 20′ W	Sept. 26				Violent NW. gale all day.
78° 28′ N., 75° 20′ W	Sept. 27				Do.
78° 28′ N., 75° 20′ W	Sept. 28				High NW. wind; clear.
78° 28′ N., 75° 20′ W	Sept. 29, 9 a. m.	Calm		Clear	
78° 28′ N., 75° 20′ W	Sept. 30, 11 a. m.	SW., fresh		Fair	
	Sept. 30, 2 p. m.	SW., light		Cloudy	
78° 30′ N., 75′ 20′ W	Oct. 1, 0 a. m.	S., brisk		do	
	Oct. 1, 6 p. m.	SW., brisk		do	
78° 30′ N., 75° 20′ W	Oct. 2				Calm and cloudy.
78° 30′ N., 75° 20′ W	Oct. 3				Cloudy; occasional snow; light N. wind.
78° 30′ N., 75° 20′ W	Oct. 4, 5 p. m.	N., light		Fair	
78° 30′ N., 75° 20′ W	Oct. 5, 9 a. m.	Calm		Cloudy	
	Oct. 5, 1 p. m.	do		do	
78° 30′ N., 75° 20′ W	Oct. 6, 2 p. m.	NW		do	
78° 30′ N., 75° 20′ W	Oct. 7, 9 a. m.	SW., light		do	
78° 30′ N., 75° 20′ W	Oct. 8, 10 a. m.	SW		do	
	Oct. 8, 3 p. m.	NW., light		do	
78° 30′ N., 75° 20′ W	Oct. 9, 9 a. m.	Calm		do	
	Oct. 9, 5 p. m.	W., light		Fair	
78° 30′ N., 75° 20′ W	Oct. 10, 9 a. m.	NW., light		Light snow	
78° 30′ N., 75° 20′ W	Oct. 11, 6 a. m.	Calm		Fair	
78° 48′ N., 74° 40′ W	Oct. 12, 6 a. m.	do		Clear	
78° 48′ N., 74° 40′ W	Oct. 13				Cloudy, with occasional snow.
78° 46′ N., 74° 20′ W	Oct. 14, 6 a. m.	SW., light		Cloudy	

t N. wind.

TABLE CLXXX.—*Barometric readings at Camp Clay, Ellesmere Land.*

(Observations reduced for temperature and elevation.)

$\phi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

Date.	October, 1883.						November, 1883.					
	7 a. m.	11 a. m.	3 p. m.	7 p. m.	Daily means. Inches.	Daily means. Millimeters.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	Daily means. Inches.	Daily means. Millimeters.
	29.000 +	29.000 +	29.000 +		29.000 +	700 +	29.000 +	29.000 +	29.000 +	29.000 +	29.000 +	700 +
1							.700				.7000	54.37
2							.740				.7400	55.38
3							.700				.7000	54.37
4							.640				.6400	52.84
5							.630	.690	.622		.6473	53.02
6							.629	.676	.718	.727	.6875	54.05
7							.778	.785	.804		.7890	56.63
8							.843	.893	.926		.8873	59.12
9							1.061	1.101	1.141	1.189	1.1230	65.11
10							1.042	.928	.890		.9533	60.80
11							.923	.850	.843	.812	.8570	58.36
12							.782	.815	.823		.8067	57.07
13							.687	.490	.550		.5757	51.20
14							.636	.689	.732		.6857	54.00
15							.613	.748	.729		.6967	54.27
16							.093	.160	.337		**.1967**	**41.56**
17							.617	.581	.514		.5707	51.09
18							.430	.420	.338		.3960	46.64
19							.484	.624	.653		.5870	51.50
20							.868		.968		.9180	59.90
21							.991	1.001	.995		.9957	61.67
22							.979	.934	.899		.9373	60.39
23							.893	.918	.920		.9103	59.70
24							1.020	1.019	1.051		1.0300	62.75
25							1.195	1.200	1.329		1.2413	68.11
26		.850			.850	58.18	1.273	1.315	1.406		1.3313	70.40
27	1.050	1.080			1.065	63.64	1.415	1.316	1.338		**1.3563**	**71.03**
28	.880	.910[a]	.910		.900	59.45	.859	.760			.8095	57.15
29	1.030	1.060			1.045	63.13	.730	.776	.762		.7560	55.79
30	.870	.840			.855	58.31	.613	.575	.489		.5590	50.79
31	.820	.850			.835	57.80						
Means, inches							**.7955**	.8106	**.8311**		.8028	
Means, millimeters, 700 +							**56.79**	57.17	**57.70**			56.97

[a] At noon.

TABLE CLXXX.—*Barometric readings at Camp Clay, Ellesmere Land.*

(Observations reduced for temperature and elevation.)

$\phi = +78° 54'$ λ *about* $-74° 30'$

December, 1883.						January, 1884.						
7 a. m.	11 a. m.	3 p. m.	7 p. m.	Daily means. Inches.	Daily means. Millimeters.	7 a. m.	11 a. m.	3 p. m.	7 p. m.	Daily means. Inches.	Daily means. Millimeters.	Date.
29.000 +	29.000 +	29.000 +	29.000 +	29.000 +	700 +	29.000 +	29.000 +	29.000 +		29.000 +	700 +	
1.235	.489	.579	....	.7677	56.08	1.647	1.705	....	....	**1.6760**	**79.15**	1
1.096	1.182	1.123	....	1.1337	65.39	1.758	1.637	1.506	....	1.6337	78.08	2
1.392	1.506	1.235	....	**1.3777**	**71.58**	1.651	....	1.566	....	1.6085	77.44	3
.972	.839	.660	....	.8237	57.51	1.114	1.066	.999	....	1.0597	63.50	4
.520	.548	.578	....	.5487	50.51	.605	.634	.500	....	.5797	51.30	5
.547	.528	.940	....	.6717	53.64	....	.794	....	....	.7940	56.75	6
.502	1.050	1.058	....	.8700	58.68	.241	.291	.263	....	.2650	43.32	7
.752	.831	1.203	....	.9287	60.16	.070	(28.934)	(28.944)	....	**(28.9827)**	**36.14**	8
.950	.937	.906	....	.9310	60.24	.141	.400	....	....	.2705	43.45	9
.864	.851	.850	....	.8550	58.31	.964	1.057	1.240	....	1.0870	64.20	10
.929	.826	.819	....	.8580	58.38	1.062	1.004	.749		.9383	60.41	11
1.047	1.086	1.019	....	1.0507	63.27	.565	.594	.596		.5850	51.45	12
.781	.937	.850	....	.8560	58.31	.581	.630	....		.6055	51.97	13
.907	.880	.951	....	.9127	59.76	.873	.951	.907		.9103	59.70	14
1.160	1.162	1.139	....	1.1537	65.89	1.017	1.047	1.055		1.0397	62.99	15
.834	.661	.528	.343	.5915	51.61	.781	.699	.615		.6983	54.31	16
.461	.439	.489	....	**.4630**	**48.35**	.557	.552	.611		.5733	51.14	17
1.034	1.095	.599	....	.9093	59.68	.552	.496	....		.5240	49.89	18
.973	.740	.691	....	.8013	56.94	.541	.585	....		.5630	50.89	19
.956	.753	.817	....	.8420	57.97	.695	.751	.887		.7777	56.33	20
.940	.556	.535	....	.6770	53.78	.957	1.052	1.044		1.0177	62.43	21
.693	.740	.736	....	.7230	54.95	.967	1.033	.942		.9807	61.49	22
.809	.728	....	....	.7685	56.10	.936	.837	1.065		.9460	60.61	23
.771	.727	.783	....	.7603	55.89	.988	.959	.918		.9550	60.85	24
.851	.835	.979	....	.8883	59.14	.896	.936	.895		.9090	59.68	25
....	1.297	1.282	....	1.2895	69.34	.896	.841	.810		.8490	58.15	26
1.227	1.206	1.181	....	1.2047	67.18	.892	.919	.862		.8910	59.22	27
1.063	1.079	....	....	1.0710	63.79	.894	.984	.937		.9383	60.41	28
1.148	1.108	1.085	....	1.1137	64.87	.895	.895	.990		.9267	60.11	29
1.064	.963	.983	....	1.0033	62.07	.750	.663	.579		.6640	53.45	30
1.090	1.111	1.213	....	1.1380	65.49	.547	.529	.488		.5213	49.82	31
.9189	.8932	**.8900**	....	.9027	....	.8334	**.8158**	**.8387**		.8313	....	
59.91	59.27	**59.19**	....	....	59.51	57.75	**57.30**	**57.78**		--	57.70	

TABLE CLXXX.—*Barometric readings at Camp Clay, Ellesmere Land*—Continued.

(Observations reduced for temperature and elevation.)

$\phi = +87° 54'$ $\lambda =$ *about* $- 74° 30'$

Date.	February, 1884.					March, 1884.					
	7 a. m.	11 a. m.	3 p. m.	Daily means.		7 a. m.	11 a. m.	3 p. m.	7 p. m.	Daily means.	
				Inches.	Millimeters.					Inches.	Millimeters.
	29.000+	29.000+	29.000+	29.000+	700+	29.000+	29.000+	29.000+	29.000+	29.000+	700+
1	.383	.278	.188	.283	43.78	.917	.725	.777	.859	.820	57.41
2	.307	.443	.523	.424	47.35	.551	.655	.631	.581	.604	51.93
3	.388	.348	.419	.385	46.37	.694	.877	.812	.780	.791	56.68
4	.750	.733	.721	.735	55.26	.998	.955	.965	.988	.976	61.37
5	.944	.951	.938	.944	60.56	.875	.612	.664	.806	.739	55.36
6	.949	.933	.867	.916	59.85	.446	.481	.399	.407	.433	47.59
7	.850	.949	.944	.914	59.80	.403	.311	.300	.324	.334	45.07
8	.798	.763	.871	.811	57.19	.285	.330	.261	.278	**.289**	**43.93**
9	.948	.992	1.057	.999	61.96	.576	.708	.633	.615	.633	52.67
10	.913	.817	.752	.827	57.59	.791	.838	.837	.830	.824	57.51
11	.678	.690	.683	.684	53.96	.834	.780	.799	.869	.820	57.41
12	.628	.754	.772	.718	54.82	.859	.783	.866	.862	.842	57.97
13	.750	.754		.752	55.69	.724	.703	.713	.713	.713	54.70
14	.606	.761	.836	.734	55.23	.809	.906	.865	.834	.854	58.28
15	1.105	1.120	1.095	**1.107**	**64.71**	.928	1.037	.974	.944	.971	61.25
16	.568	.573	.449	.530	50.05	1.089	.992	1.047	1.107	1.059	63.49
17	.253	.290	.284	**.276**	**43.59**	.907	.697	.879	.858	.835	57.80
18	.375	.435	.560	.457	48.20	.534	.628	.601	.565	.582	51.37
19	.525	.533	.649	.569	51.04	.735	.875	.857	.764	.808	57.11
20	.677	.882	.955	.838	57.87	.977	.913	.983	.974	.962	61.02
21	.957	.904	.751	.871	58.71	.974		.834	.923	.910	59.70
22	.370	.385	.379	.378	46.18	.949			.960	.954	60.82
23	.951	1.022	1.094	1.022	62.54	.797		.802	.780	.794	56.75
24	.958	.789	.739	.829	57.64	.755		.754	.763	.757	55.82
25	.354	.247	.272	.291	43.98	.712	.722	.718	.724	.719	54.85
26	.793	.737	.905	.812	57.21	.779	.687	.783	.740	.747	55.56
27	.889	.826	.807	.841	57.95	.872	.866	.860	.878	.869	58.66
28	.790	.803	.754	.782	56.45	.857	.986	.963	.860	.916	59.85
29	.893	.935	.954	.927	60.13	1.203	1.369	1.386	1.313	1.318	70.06
30						1.329	1.247	1.213	1.318	1.277	69.02
31						1.363			1.340	**1.352**	**70.93**
Means, inches	**.702**	.712	**.722**	.712		.823	**.796**	.799	**.824**	.823	
Means in millimeters, 700+	**54.42**	54.67	**54.92**		54.67	57.49	**56.80**	56.88	**57.51**		57.49

TABLE CLXXX.—*Barometric readings at Camp Clay, Ellesmere Land*—Continued.

(Observations reduced for temperature and elevation.)

$\phi = +87° 54'$ $\lambda =$ *about* $- 74° 30'$

April, 1884.						May, 1884.					
7 a. m.	11 a. m.	3 p. m.	7 p. m.	Daily means.		7 a. m.	11 a. m.	3 p. m.	Daily means.		Date.
				Inches.	Millimeters.				Inches.	Millimeters.	
29.000+	29.000+	29.000+	29.000+	29.000+	700+	29.000+	29.000+	29.000+	29.000+	700+	
1.259	1.189	1.255	1.264	1.242	68.13	1.268	1.271	1.248	1.266	68.74	1
1.469	1.482	1.486	1.525	1.490	74.43	1.215	1.227	1.212	1.218	67.52	2
1.543	1.601	1.578	1.544	1.567	76.39	1.209	1.197	1.193	1.206	67.07	3
1.534	1.686	1.746	1.756	**1.680**	**79.26**	----------	1.279	1.314	1.300	69.61	4
1.635	1.673	1.619	1.563	1.622	77.78	1.375	1.342	1.314	**1.344**	**70.72**	5
1.248	1.241	1.171	1.176	1.209	67.30	1.172	1.127	1.136	1.145	65.67	6
1.052	1.026	----------	1.036	1.038	62.95	.816	.886	1.003	.902	59.50	7
1.085	----------	----------	.956	1.020	62.49	1.349	1.154	1.039	1.181	66.59	8
1.058	----------	1.071	1.014	1.048	63.20	1.127	1.177	----------	1.152	65.85	9
----------	1.066	1.120	.885	1.024	62.59	1.240	1.239	----------	1.240	68.08	10
1.038	.995	.948	----------	.994	61.83	1.268	1.269	----------	1.268	68.79	11
.818	.889	.936	----------	.881	58.97	1.279	1.257	----------	1.268	68.79	12
1.228	----------	1.252	1.141	1.207	67.35	1.231	1.225	----------	1.228	67.77	13
1.223	1.238	1.189	----------	1.217	67.50	1.118	1.097	1.100	1.105	64.66	14
1.070	----------	.832	----------	.925	60.08	1.123	1.053	----------	1.088	64.22	15
.869	.862	1.114	1.186	1.008	62.19	1.085	----------	----------	1.085	64.15	16
1.058	1.044	1.505	1.492	1.275	68.97	1.098	----------	----------	1.098	64.47	17
1.404	1.496	1.513	1.422	1.459	73.65	1.166	----------	1.155	1.160	66.05	18
1.538	1.528	1.262	1.269	1.399	72.12	1.172	----------	----------	1.172	66.35	19
1.317	1.311	1.170	1.055	1.213	67.40	.911	.836	----------	.874	58.78	20
1.179	1.149	.955	1.031	1.078	63.96	.775	----------	----------	.775	56.27	21
.966	.931	1.077	1.059	1.008	62.19	.659	----------	----------	**.659**	**53.33**	22
1.019	1.074	1.018	----------	1.037	62.93	(*)	(*)	(*)	----------	----------	23
1.071	.966	.744	.705	.872	58.73	----------	----------	----------	----------	----------	24
.808	.781	.879	.855	.831	57.70	----------	----------	----------	----------	----------	25
.871	.903	.805	.819	.850	58.19	----------	----------	----------	----------	----------	26
.827	.816	.828	.761	**.808**	**57.11**	----------	----------	----------	----------	----------	27
.877	.853	1.074	1.074	.970	61.22	----------	----------	----------	----------	----------	28
.976	1.046	1.058	1.132	1.053	63.34	----------	----------	----------	----------	----------	29
1.046	1.057	----------	----------	1.052	63.31	----------	----------	----------	----------	----------	30
----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	----------	31
1.141	1.150	**1.156**	1.155	1.136	----------	**1.126**	1.165	**1.171**	1.124	----------	
65.57	65.80	**65.95**	65.93	----------	65.44	**65.18**	66.18	**66.33**	----------	65.13	

* Barometer broken.

TABLE CLXXXI.—*Temperature of the air (in degrees Fahrenheit) at Camp Clay, Ellesmere Land.*

$\phi = + 78° 54'$ $\lambda =$ *about* $- 74° 30'$

October, 1883.						November, 1883.				
Date.	7 a. m.	11 a. m.	8 p. m.	Daily means.	Minimum.	Date.	11 a. m.	Noon.	Daily means.	Minimum.
1						1	— 3.0		— 3.5[a]	— 4.0
2						2	— 8.0	— 6.0[g]	— 7.7[a]	— 9.0
3						3	—13.0	—13.0[h]	—13.0[a]	—13.0
4						4	—20.0		—22.5[a]	— 25.0
5						5	— 9.0		—16.5[a]	—24.0
6						6	—11.0		—16.0[a]	21.0
7						7	—20.3		—20.3[a]	—20.3
8						8	—29.0		—30.2[a]	—31.5
9						9	—23.5		—26.8[a]	—30.0
10						10	—16.0		—23.0[a]	30.0
11						11	—19.0		—23.5[a]	—28.0
12						12	—24.0		—29.2[a]	—34.5
13						13	—27.0		—30.4[a]	—33.8
14						14	—19.0		—24.5[a]	—30.0
15						15	—34.5		—36.4[a]	—38.2
16	3.0			2.2[a]	1.5	16	—12.5	—12.0	—18.7[a]	—31.5
17				— 6.5[a]	— 6.5	17	—12.0	—12.0	—17.3[a]	—28.0
18	— 0.5[b]			— 3.2[a]	— 6.0	18	—12.0		—13.0[a]	—14.0
19	—11.0[c]			—11.0[a]	—11.0	19	—30.2		—34.5[a]	—38.8
20	2.5[c]			— 5.2[a]	—13.0	20	—16.0		—16.0[a]	—16.0
21	3.5[d]			0.0[a]	— 3.5	21	—14.0		—18.8[a]	—23.5
22				— *8.0*		22	—23.2		—25.6[a]	—28.0
23			—16.0	—16.0[a]	—16.0	23	—24.0		—32.6[a]	—41.2
24		— 1.5		— 3.5[a]	— 5.5	24	—24.0		—25.0[a]	—26.0
25		— 1.5		— 2.8[a]	— 4.0	25	—23.0		—24.0[a]	—25.0
26			—15.0[f]	—15.0[a]	—15.0	26	—34.0		—33.2[a]	—36.5
27		—16.0		—**18.2**[a]	—**20.5**	27	—32.5		—**38.0**[a]	—**43.5**
28		— 2.0[e]		— 9.8[a]	—17.5	28	—11.0		—22.5[a]	—34.0
29	5.0			**5.0**[a]	5.0	29	— 5.0		— 9.5[a]	—14.0
30	— 8.0			— 8.0[a]	— 8.0	30	3.0		— **1.0**[a]	— 5.0
31	2.0	2.0		0.0[a]	— 4.0					
Means				— 6.25		Means			—21.82	

[a] Including minimum. [b] Observation at 9 a. m. [c] Observation at 8 a. m. [d] Observation at 3 a. m. [e] Observation at noon. [f] Observation at 12 midnight. [g] Observation at 3 p. m. [h] Observation at 10 a. m.

TABLE CLXXXI.—*Temperature of the air (in degrees Fahrenheit) at Camp Clay, Ellesmere Land*—**Continued.**

$\phi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

December, 1883.				January, 1884.					
Date.	11 a. m.	2 p. m.	Daily means.	Date.	8 a. m.	11 a. m.	Noon.	Daily means.	Minimum.
1	−6.0	−7.2[a]	−6.6	1		−32.0		−32.0	
2			*−6.6*	2		−28.0		−28.0	
3			*7.3*	3		−31.0		−31.0	
4	−8.0		−8.0	4		−34.0		−34.0	
5	5.0	4.0	**4.5**	5		−25.2		−25.2	
6	−10.0		−10.0	6		−24.0		−24.0	
7	−21.0		−21.0	7		−31.0		−31.0	
8	−24.0		−24.0	8		−28.0		−28.0	
9	−19.0		−19.0	9		−29.1		−29.1	
10	−27.0		−27.0	10		−28.5		−33.5[b]	**−38.5**
11	−20.0		−20.0	11		−21.0		−21.0	
12	−25.0		−25.0	12		−18.5		−18.5	
13	−23.0		−23.0	13		−21.0		−21.4[b]	−21.7
14	−17.0		−17.0	14		−18.5		−18.5	
15	−17.0		−17.0	15		−27.5		−27.5	
16	−21.0		−21.0	16		−21.3		−21.3	
17	−13.0		−13.0	17		−36.0		−36.0	
18	−17.0		−17.0	18		−40.0		−40.0	
19	−21.0		−21.0	19		−42.0[c]		**−42.0**	
20	−25.0		−25.0	20		−42.0[c]		**−42.0**	
21	−29.0		−29.0	21		−34.0		−34.0	
22	−29.0		−29.0	22		−26.8		−27.2[b]	−27.5
23	−24.5		−24.5	23		−20.2		−20.2	
24	−22.5		−22.5	24		−20.2		−20.2	
25	−35.5		−35.5	25		−22.0		−22.0	
26	−34.8		−34.8	26		−25.0		−25.5[b]	−26.0
27	−39.5		**−39.5**	27		−35.0		−35.5[b]	−36.0
28	−35.0		−35.0	28	−36.0	−38.0	−38.2	−37.4	
29	−31.5		−31.5	29		−32.0		−32.0	
30	−21.2		−21.2	30	−36.0	−35.0	−34.0	−35.0	
31	−20.5		−20.5	31	−2.0	−6.0		**−4.0**	
Means			−21.16	Means				−28.29	

[a] Minimum for day. [b] Including minimum. [c] Below −42° all day.

TABLE CLXXXI.—*Temperature of the air* (*in degrees Fahrenheit*) *at Camp Clay, Ellesmere Land*—Continued.

$\phi = +78° 54'$ $\lambda = about -74° 30'$

February, 1884.

Date.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	Daily means.
1						—15.5								—15.5
2		—19.0				—27.5				—36.0				—27.5
3			—26.0			—19.5							—18.0[a]	—21.2
4						—20.0							—24.5[b]	—22.2[c]
5						—23.0								—23.0
6						—20.2								—20.2
7						—27.5								—27.5
8						—36.4		([d])						—36.4
9				—38.5		—38.0								—38.2
10				—36.5		—33.0				—33.8				—34.4
11						—36.0			—37.0					—36.5
12						—42.0[e]								—42.0
13		—34.0				—33.0	—36.0							—34.3
14			—28.0			—26.0								—27.0
15		—25.3				—22.0								—23.6
16			—21.2			—22.2								—21.7
17		—12.5				—15.0				—21.5				—16.3
18		— 6.5				— 6.5				— 9.0				— 7.3
19	2.0[f]	8.5	12.0	[g]12.0		2.2			— 1.0			3.5		5.5
20		—11.2				— 5.0					— 2.5			— 6.2
21		— 4.0				— 3.0		5.0			— 7.0		—10.0[a]	— 5.8
22	—11.0			— 6.7			— 6.0					— 6.4		— 7.5
23		— 4.5			— 5.0	— 5.4						— 6.1		— 5.2
24		—11.2		—12.5	—13.0	—13.2	—15.0	— 16.0	—14.2			—11.0		—13.3
25		—16.1		—14.4			—12.1				—10.0	—10.1		—12.5
26		—10.[illegible]	—10.0	—11.5	—13.7			—15.0	—14.2			—16.0	—18.7[h]	—13.6
27		—22.0	—22.0	—23.5	—23.0	—21.5	—22.5	—27.0			—27.2	—29.0		—24.2
28	—23.0	—24.[illegible]	—25.5	—26.5		—26.5		—26.0	—26.5	27.1		—27.0	—27.1	—25.9
29	—32.0	—30.5		—31.5	—31.0	—31.0	—30.0		—30.5			—34.9		—31.4
Means														—21.20

[a] Observation at 8 p. m. [b] Minimum observed. [c] Minimum included. [d] Below —42°. [e] Below —42° all day. [f] Observation at 2 a. m. [g] Observation at 9.30 p. m. [h] Observation at 7 p. m.

TABLE CLXXXI.—*Temperature of the air (in degrees Fahrenheit) at Camp Clay, Ellesmere Land*—Continued.

$\varphi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

March, 1884.

Date.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	5 p. m.	6 p. m.	Daily means.
1		−35.2	−33.5										**−34.4**
2		−22.5		−24.0		−22.5			−22.5		−24.0		−23.1
3		−27.5				−26.6		−24.0	−25.0	−24.0[a]			−25.4
4		−21.0	−21.0			−21.6		−21.0			−23.0		−21.5
5		−22.5	−21.0			−23.0			−19.0				−21.4
6	−20.0	−20.8	−21.0				−21.0			−21.2	−24.0		−21.3
7		−15.4	−12.5			−15.0			−15.0	−18.0			−15.2
8		− 3.0						− 2.4					− 2.7
9		−10.5		− 9.5		− 9.5	− 7.0			− 8.0	− 9.0		− 8.0
10		− 9.5				− 8.5			− 6.5				− 8.2
11	−19.0	−18.0		−18.0	−12.0	−15.5		−14.2	−17.0	−18.0	−21.5		−16.9
12	−25.1	−23.5	−22.0	−21.5		−18.2	−17.0	−15.0	−18.2		−22.5	−23.5	−20.6
13	−23.0	−19.0			−19.0	−16.0		−21.1	−21.7		−25.0	−25.8	−21.3
14	−24.5	−22.2	−21.1			−22.0	−23.1	−25.2		−24.5	−25.3	−30.5[b]	−24.3
15	−30.8	−30.1				−21.0		−22.5	−22.0		−31.3		−20.3
16	−34.7	−24.1	−25.0		−27.0	−27.8			−30.2		−31.1		−28.6
17	−25.0		−25.5			−14.0		−23.0	−23.5		−26.6		−22.9
18	−16.0	−11.1		−11.0		− 7.0		−13.0	−15.0				−12.2
19	−16.3	−15.0				− 9.0		− 9.8	−14.0		−12.0		−12.6
20	−20.2	−18.0	−14.0			−14.5	−15.8	−16.0	−18.0	−17.0	−19.0		−16.9
21	−19.8		−16.0			−17.6	−19.0		−11.5		−22.2		−17.7
22	−14.0	−10.0	− 9.0	− 8.5		− 3.5		− 6.0	− 8.0	− 8.2		−12.0	− 8.8
23	−22.0	−20.2[c]										−22.8	−21.7
24	−23.0[d]								−21.0				−22.0
25	−28.0										−12.0		−20.0
26		−10.0				0.0				− 2.0[a]			− 4.0
27		−12.0					−10.0			− 9.0			−10.3
28		−24.0								−18.0[a]			−21.0
29		− 4.5		0.0			1.0		− 5.0				− 2.1
30								− 3.0			− 5.5		− 4.2
31							3.0						**3.0**
Means													−16.56

[a] Observation at 4 p. m. [b] Observation at 7 p. m. [c] Observation at 3 a. m. [d] Observation at 5 a. m.

TABLE CLXXXI.—*Temperature of the air (in degrees Fahrenheit) at Camp Clay, Ellesmere Land*—Continued.

$\phi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

Date.	April, 1884.											
	4 a. m.	5 a. m.	6 a. m.	7 a. m.	9 a. m.	11 a. m.	Noon.	2 p. m.	3 p. m.	7 p. m.	9 p. m.	Daily means.
1		− 5.5				6.0		10.0	7.5			4.5
2				−13.0								−13.0
3			−16.0				− 9.0			−14.0[a]		−13.0
4		8.0										8.0
5			−10.0				− 6.0		−13.0[b]			− 9.7
6		−10.0	− 5.0						2.0	−8.0		− 5.2
7			− 8.7	− 6.0		− 1.0		2.0[c]	2.5	0.5[a]		− 1.8
8				13.2	14.7[d]			11.0[c]	− 5.0			8.5
9				− 7.0		1.5						− 2.8
10	2.5			3.0				− 9.0		−14.0		− 4.4
11	−23.0			−20.5	−14.0	−13.0			−15.5	−21.0	−24.0	−18.7
12	−24.0			−20.0		−14.0		−24.0		−20.1		−20.4
13				− 9.0		− 8.2				−14.0		−10.4
14				−15.2		− 4.1			−14.0			−11.1
15				−10.0		−10.0			−12.0	− 9.0[e]		−10.2
16				5.0		16.0			19.8	2.0		10.7
17			5.0	5.2	16.0	14.0			12.2	− 5.0		7.9
18				− 1.5		12.0			0.5	− 3.0		2.0
19	−17.0[f]			4.5		5.0			3.5	0.0		− 0.8
20				1.5		0.0			− 5.0	− 4.0		− 1.9
21				− 0.5		10.3			− 2.0	− 2.0[e]		1.4
22		5.0		7.5		11.3			15.0	8.5		9.5
23		5.0		8.3		11.6			7.6	5.0		7.5
24	0.0			− 2.0		2.5			2.5			0.8
25	0.0			2.0		9.0			8.0			4.8
26		7.0		10.0		11.0			10.0	− 2.0		7.2
27	1.0			8.0		14.5			11.0	1.0	− 6.0	4.9
28		− 4.0		5.3	12.0	11.0	21.0		6.0	0.0		7.3
29				2.0		5.0			3.0	0.0		2.5
30		5.0		3.0		10.0		12.0			7.0	7.4
Means												−0.95

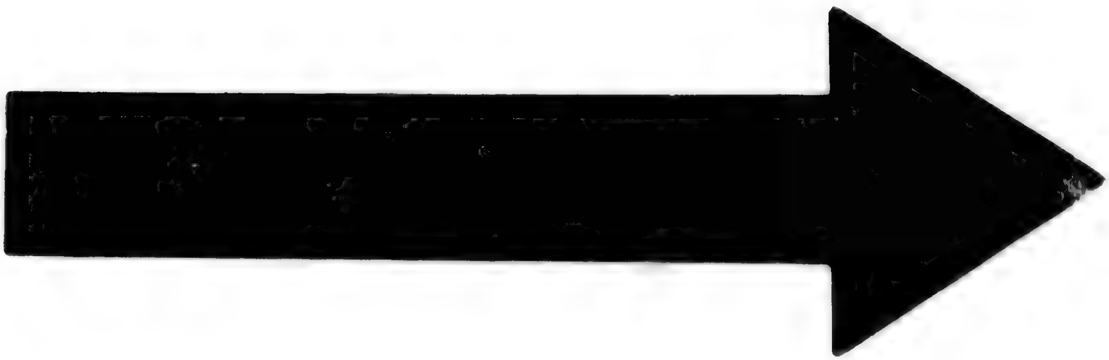
[a] Observation at 6 p. m.
[b] Observation at 4 p. m.
[c] Observation at 1 p. m.
[d] Observation at 8 a. m.
[e] Observation at 5 p. m.
[f] Observation at 1 a. m.

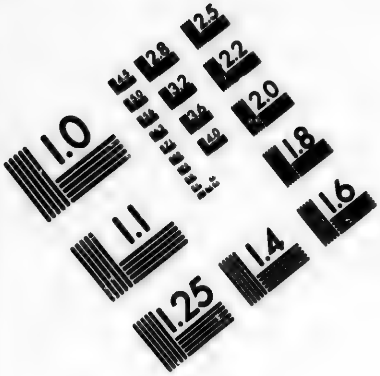
TABLE CLXXXI—*Temperature of the air (in degrees Fahrenheit) at Camp Clay, Ellesmere Land*—Continued.

$\phi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

Date.	May, 1884.												
	1 a. m.	2 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	11 a. m.	Noon.	3 p. m.	5 p. m.	9 p. m.	10 p. m.	Daily means.
1					10.0		10.0	10.0[a]	11.0	6.0[b]		1.0[c]	8.0
2			2.0	2.0	8.0		9.0		19.0				8.0
3	— 4.0				0.0		1.0		6.0				0.8
4			5.0		6.0		10.2		6.0	7.0[b]		0.0[d]	5.7
5					11.0		11.0	16.5	12.0	10.0			12.1
6								4.0[a]	15.5	20.0[e]			16.5
7			14.0		14.0		32.5	21.0	15.0				19.3
8					15.0	16.0	16.0		16.0	6.0[e]			13.8
9					6.5	6.5[f]	14.0		10.0[g]	9.0	5.5		8.6
10	0.0	0.0	4.0		6.2				7.5		3.0		3.4
11	— 2.0	— 4.0							7.5		1.0		**0.6**
12	5.0			9.0							3.0[h]	3.0	5.0
13					10.0	14.0[i]	13.6			9.0		5.0	10.3
14			7.0		12.0	12.0	18.0		16.0	15.0[g]		10.0	12.9
15					11.0		16.0		22.0	14.0		10.0	14.6
16			12.0		11.0			15.0		11.0			12.2
17			12.0		12.0			25.5[a]					16.5
18		10.0[j]	21.0				18.0						16.3
19					21.0		31.0						26.0
20						23.0[i]							23.0
21					29.0				36.0				**32.5**
22													*28.9*
23													*25.2*
24	19.0			24.0									21.5
25						26.0							26.0
26									26.0				26.0
27						24.0							24.0
28									24.0[k]				24.0
29						27.0[f]							27.0
30						29.0[i]			27.0				28.0
31													*31.5*
Means													17.04

[a] Observation at 1 p. m.
[b] Observation at 7 p. m.
[c] Observation at 11 p. m.
[d] Observation at 12 p. m.
[e] Observation at 6 p. m.
[f] Observation at 9 a. m.
[g] Observation at 4 p. m.
[h] Observation at 8 p. m.
[i] Observation at 10 a. m.
[j] Observation at 3 a. m.
[k] Observation at 2 p. m.





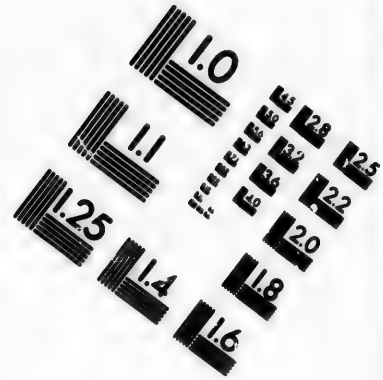
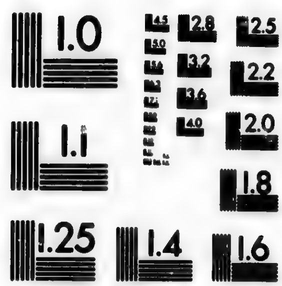
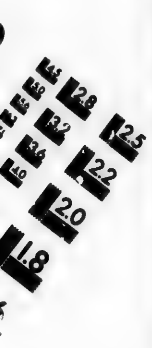


IMAGE EVALUATION
TEST TARGET (MT-3)

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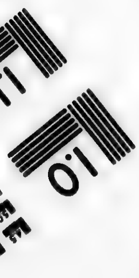
2.5
3.2
2.2
3.6
4.0
2.0
1.8

1.1
1.0

TABLE CLXXXI.—*Temperature of the air (in degrees Fahrenheit) at Camp Clay, Ellesmere Land*—Continued.

$\phi = +78° 54'$ $\lambda =$ *about* $- 74° 30'$

Date.	June, 1884.										
	1 a. m.	7 a. m.	10 a. m.	11 a. m.	3 p. m.	4 p. m.	6 p. m.	7 p. m.	8 p. m.	Daily means.	Minimum.
1			35.0							35.0	
2									35.0	35.0	
3									31.0	**31.0**	
4			36.0	37.0						36.5	
5		31.0				34.0				32.5	
6	30.0[a]	31.0			34.0		30.0			31.2	
7		31.5		34.0	34.0					33.2	
8	31.0	38.0		38.0	39.3	40.0	35.0			36.9	
9	38.0[b]	39.0	39.0[c]		42.0		38.5		36.0	38.8	
10	34.0	35.0	40.0[d]	39.0						37.0	
11		38.0			42.0				38.0	39.3	
12		34.0		38.0			36.0	37.0		36.2	
13		32.0		33.0				37.0	31.5	33.4	
14		37.0		41.0		42.0[e]		39.0		39.8	
15		30.0	34.5[c]	34.0	37.0			39.0		34.9	
16		37.0		40.0	43.0					**40.0**	
17		34.0		34.0	35.0	38.0				34.3[f]	30.4
18		30.5		36.0	42.0					34.6[f]	30.0
19		34.5		37.5	37.8					36.6	
20		29.0		33.0	38.0					31.7[f]	**26.8**
21		31.0		34.0				31.0		**31.0**[f]	28.0
Means										35.19	

[a] Observation at 6 a. m.
[b] Observation at 8 a. m.
[c] Observation at 9 a. m.
[d] Observation at noon.
[e] Observation at 5 p. m.
[f] Minimum included.

TABLE CLXXXII.—*Wind and weather at Camp Clay, Ellesmere Land.*

$\phi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

Date.	Hour.	Wind.	Velocity.	Weather.	Remarks.
1883.					
Oct. 15	6 a. m.	Calm	0	Fair	
16	7 a. m.	NE	Fresh	Light snow	
17	11 a. m.		Brisk	Cloudy	
18	9 a. m.	NW	Light	Light snow	
19	8 a. m.	Calm	0		
20	8 a. m.	NW	Fresh	Cloudy	
21	11 a. m.	W	Light	Fair	
22	11 a. m.		Fresh	Snowy	
23	11 a. m.	NW	Light	Cloudy	
24	11 a. m.	NW	Fresh	Snowy	
25	11 a. m.	W	Light	do	
26	11 a. m.	W	do	Cloudy	
27	11 a. m.	Calm	0	Foggy	
28	12 noon			Heavy snow	Strong wind in straits.
29	11 a. m.				
30	11 a. m.	W	Light	Cloudy	
31	11 a. m.	Calm	0	Clear	
Nov. 1	11 a. m.	NW	Light	Fair	
2	11 a. m.	NW	do	Cloudy	
3	11 a. m.	NW	do	Clear	
4	11 a. m.	Calm	0	do	
5	11 a. m.	Calm	0	do	
6	11 a. m.	NW	Fresh	do	
7	11 a. m.				Strong westerly gale in morning.
8	11 a. m.	S	Light	Cloudy	
9	11 a. m.	Calm	0	Clear	
10	11 a. m.	SW	Fresh	Cloudy	
11	11 a. m.	SW	do	Clear	
12	11 a. m.	Calm	0	do	
13	11 a. m.	Calm	0	do	
14	11 a. m.	W	Fresh	Cloudy	
15	11 a. m.	W	do	Clear	
16	12 noon		do	Cloudy	Strong gale last night; tide highest known; high wind 12.05 p. m. Washington mean time.
17	12 noon	W	Light	Cloudy	
18	11 a. m.	W	do	do	
19	11 a. m.	Calm	0	do	
20	11 a. m.	Calm	0	do	
21	11 a. m.	W	Fresh	do	
22	11 a. m.	Calm	0	Clear	
23	11 a. m.	Calm	0	Cloudy	
24	11 a. m.	Calm	0	do	
25	11 a. m.	Calm	0	do	
26	11 a. m.	W	Light	Clear	
27	11 a. m.	W	Fresh	do	
28	11 a. m.	W	Light	do	
29	11 a. m.	W	do	Cloudy	
30	11 a. m.			do	
Dec. 1	11 a. m.	W	Light	do	
2	11 a. m.	E	Gale	do	Exceedingly violent gale previous night, damaging house and blowing away minimum thermometer.
3	11 a. m.	W	Brisk	do	
4	11 a. m.	W	do	do	
5	11 a. m.	W	do	do	
6	11 a. m.	W	do	do	
7	11 a. m.	W	do	Clear	
8	11 a. m.	W	do	do	
9	11 a. m.	W	do	do	
10	11 a. m.	W	Fresh	do	
11	11 a. m.	Calm	0	do	
12	11 a. m.	W	Light	do	
13	11 a. m.	W	do	do	Heavy wind last night, abating to-day.
14	11 a. m.	Calm	0	do	
15	11 a. m.	W	Brisk	Cloudy	
16	11 a. m.		do		
17	11 a. m.	Calm	0	Cloudy	
18	11 a. m.	Calm	0	Clear	

TABLE CLXXXII.—*Wind and weather at Camp Clay, Ellesmere Land*—Continued.

$\phi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

Date.	Hour.	Wind.	Velocity.	Weather.	Remarks.
1883.					
Dec. 19	11 a. m	W	Brisk	Clear	
20	11 a. m	Calm	0	do	
21	11 a. m	Calm	0	do	
22	11 a. m	Calm	0	do	
23	11 a. m		Fresh	Cloudy	
24	11 a. m	W	Light	Clear	
25	11 a. m	Calm	0	do	
26	11 a. m	Calm	0		
27	11 a. m	Calm	0	Clear	
28	11 a. m	W	Light	do	
29	11 a. m	Calm	0	Fair	Easterly storm last night.
30	11 a. m	E	Brisk	Cloudy	Easterly gale set in about noon.
31	11 a. m	E	do	do	Very violent easterly storm last night.
1884.					
Jan. 1	11 a. m	Calm	0	Clear	
2	11 a. m	W	Light	do	
3	11 a. m	W	do	do	Aurora 3.30 to 5 p. m.
4	11 a. m	W	Brisk	Cloudy	
5	11 a. m	W	do	do	
6	11 a. m	W	Light	Clear	
7	11 a. m	W	do	do	
8	11 a. m	W	do	do	Storm in early morning.
9	11 a. m	Calm	0	do	Very fine day.
10	11 a. m	Calm	0	Cloudy	Do.
11	11 a. m	W	Light	Clear	Do.
12	11 a. m	W	do	do	High wind all last night.
13	11 a. m		Fresh	Cloudy	Severe storm last night and again this afternoon.
14	11 a. m		do	do	
15	11 a. m	W	Light	Clear	
16	11 a. m	W	Brisk	Cloudy	Day very windy.
17	11 a. m	Calm	0	do	Aurora at 7 p. m.
18	11 a. m	Calm	0	Clear	
19	11 a. m	Calm	0	do	Very fine day.
20	11 a. m	Calm	0	Cloudy	Do.
21	11 a. m	W	Light	Clear	
22	11 a. m	W	do	do	
23	11 a. m		Fresh	Cloudy	Very windy all day.
24	11 a. m	W	Light	Clear	
25	11 a. m	W	do	do	Fine day.
26	11 a. m	Calm	0	do	
27	11 a. m	Calm	0	do	
28	11 a. m	Calm	0	do	
29	11 a. m	Calm	0	do	
30	11 a. m	Calm	0	Cloudy	Day generally clear.
31	11 a. m		Light	do	
Feb. 1	7 a. m	W	do	do	
2	7 a. m	W	do	do	Day very bright, giving signs of returning sun.
3	7 a. m	W	Brisk	Fair	Day very fine but threatening storm in the afternoon and strong wind in gusts last night.
4	7 a. m	W	Light	Cloudy	
5	7 a. m	Calm	0	do	Day fine and generally clear.
6	7 a. m	SE	Fresh	do	Strong wind and drifting snow during day.
7	7 a. m	W	Light	Clear	
8	7 a. m	Calm	0	do	Very bright in south at noon.
9	7 a. m	Calm	0	do	
10	7 a. m	Calm	0	do	
11	5 a. m	W	Light	Cloudy	
12	7 a. m	Calm	0	Clear	
13	7 a. m	W	Light	do	Strong wind at intervals. Bache Island very bright from advancing sunlight.
14	7 a. m	Calm	0	do	Strong wind last night.
15	7 a. m	W	Fresh	do	Day very bright in south.
16	7 a. m	W	do	do	Strong wind last night; sun astronomically above horizon for first time in 115 days, but not yet visible.
17	7 a. m	W	Light	do	
18	7 a. m	Calm	0	do	
19	7 a. m	S	Gale	do	Late in the afternoon clear and calm.

TABLE CLXXXII.—*Wind and weather at Camp Clay, Ellesmere Land*—Continued.

$\phi = +78^\circ 54'$ $\lambda = about - 74^\circ 30'$

Date.		Hour.	Wind.	Velocity.	Weather.	Remarks.
1884.						
Feb.	20	7 a. m.	W.	Light	Cloudy	Strong southerly gale at times.
	21	7 a. m.	Calm	0	do.	
	22	7 a. m.	W.	Fresh	do.	
	23	7 a. m.	S.	Brisk	do.	Strong wind and snow last night and again this evening.
	24	7 a. m.	W.	do.	do.	Gale abated this morning.
	25	7 a. m.	W.	do.	do.	Strong wind, with drift, at intervals.
	26	7 a. m.	Calm	0	do.	Strong wind last night, abating this morning.
	27	7 a. m.	Calm	0	Clear	
	28	7 a. m.	Calm	0	Cloudy	
	29	7 a. m.	Calm	0	Clear	
Mar.	1	7 a. m.	W.	Fresh	do.	
	2	7 a. m.	W.	Brisk	do.	Stormy at intervals; sun not yet seen.
	3	7 a. m.	W.	High	do.	Drifting snow at intervals.
	4	7 a. m.	W.	Fresh	Cloudy	Drifting snow at intervals all day.
	5	7 a. m.	W.	do.	Fair	Strong wind all night.
	6	7 a. m.	W.	do.	Clear	Strong gale till 5 a. m., and then moderated.
	7	7 a. m.	Calm	0	do.	Fine day.
	8	7 a. m.	SE	Gale		Stormy all day.
	9	7 a. m.	SE	Fresh		Gale from 11 a. m.; exceedingly violent in evening.
	10	7 a. m.	SE	do.	Fair	Strong gale last night, abating to-day.
	11	7 a. m.	Calm	0	Clear	Fine day; Raven seen.*
	12	7 a. m.	W.	Light	Cloudy	Fine day at station, but strong westerly gale at Cape Sabine.
	13	7 a. m.	Calm	0	Clear	
	14	7 a. m.	Calm	0	do.	Very fine day.
	15	7 a. m.	Calm	0	do.	Do.
	16	7 a. m.	Calm	0	do.	Do.
	17	7 a. m.	W.	Fresh	Cloudy	Shifted to NW. and increased to gale, with drifting snow, in p. m.
	18	7 a. m.	NE.	do.	do.	High wind with snow last night, abating this morning.
	19	7 a. m.	W.	do.	do.	High wind last night.
	20	7 a. m.	W.	do.	Clear	Do.
	21	7 a. m.	W.	do.	Cloudy	Stormy at intervals during day.
	22	7 a. m.	W.	Brisk	do.	
	23	7 a. m.	W.	Light	Clear	
	24	7 a. m.	W.	do.	do.	Very fine day.
	25	7 a. m.	W.	do.	do.	
	26	7 a. m.	Calm	0	Cloudy	
	27	7 a. m.	Calm	0	Fair	Do.
	28	7 a. m.	W.	Light	Clear	
	29	7 a. m.		Gale	Cloudy	
	30	7 a. m.		do.	do.	
	31	7 a. m.		do.	do.	
Apr.	1	7 a. m.	Calm	0	do.	
	2	7 a. m.	W.	Brisk	Clear	
	3	7 a. m.	W.	Light	do.	
	4	7 a. m.	Calm	0	Cloudy	
	5	7 a. m.	W.	Light	Clear	
	6	7 a. m.	Calm	0	Cloudy	Winds in the afternoon.
	7	7 a. m.	Calm	0	Light snow	
	8	7 a. m.		Brisk	Cloudy	Westerly storm began at 2 a. m.
	9	7 a. m.	W.	High	do.	
	10	7 a. m.		Fresh	do.	
	11	7 a. m.	Calm	0	Clear	
	12	7 a. m.	Calm	0	do.	
	13	7 a. m.	Calm	0	do.	
	14	7 a. m.	Calm	0	do.	
	15	7 a. m.	W.	Light	do.	
	16	7 a. m.	W.	do.	Cloudy	Occasional light snow.
	17	7 a. m.	Calm	0	Clear	
	18	7 a. m.	SW	Brisk	Fair	Later, easterly gale.
	19	7 a. m.	W.	Light	Cloudy	
	20	7 a. m.	W.	do.	do.	
	21	7 a. m.	W.	do.	Light snow	
	22	7 a. m.	W.	Brisk	Cloudy	
	23	7 a. m.	W.	Light	Fair	
	24	7 a. m.	Calm	0	Clear	Later, west and cloudy.
	25	7 a. m.	W.	Fresh	Cloudy	
	26	7 a. m.	W.	Light	do.	

*Sun reached hut for first time.

TABLE CLXXXII.—*Wind and weather at Camp Clay, Ellesmere Land*—Continued.

$\phi = +78° 54'$ $\lambda =$ *about* $-74° 30'$

Date.	Hour.	Wind.	Velocity.	Weather.	Remarks.
1884.					
Apr. 27	7 a. m.	Calm	0	Clear	
28	7 a. m.	Calm	0	Cloudy	Wind in Smith Sound.
29	7 a. m.	Calm	0	Clear	Very fine day.
30	7 a. m.	W.	Light	Cloudy	
May 1	7 a. m.	W.	do.	Light snow	
2	7 a. m.	W.	Fresh	Cloudy	
3	7 a. m.				
4	7 a. m.	W.	Light	Clear	
5	7 a. m.	W.	do.	Fair	
6	7 a. m.	E	Gale	Heavy snow	Violent easterly gale from 3 a. m. to 2 p. m.
7	7 a. m.	E	High	Stormy	Gale all night; abated at noon, but recommenced 2.30 p. m.
8	7 a. m.	N	Light	Cloudy	Storm violent last night and at intervals to-day.
9	7 a. m.	W.	do.	do.	Pleasant day.
10	7 a. m.	W.	do.	Clear	Fine day.
11	7 a. m.	W.	do.	do.	Bright and clear.
12	7 a. m.	Calm	0	Cloudy	Severe storm in evening.
13	7 a. m.		Light	Clear	Clear in morning, stormy in afternoon.
14	7 a. m.				Clear until noon, light snow in afternoon.
15	11 a. m.	W.	Light	Clear	
16	7 a. m.	W.	do.	do.	
17	7 a. m.	W.	do.	do.	
18	7 a. m.	SE		Stormy	Gale all night, continuing more violently to-day.
19	7 a. m.			do.	Wind abated at noon.
20	7 a. m.	S.	Fresh	do.	
21	7 a. m.	Calm		Light snow	
22	7 a. m.	W.	Light	Clear	
23	7 a. m.	W.	do.	do.	
24	7 a. m.			do.	Light snow in the afternoon.
25	7 a. m.	SE	Brisk	Stormy	Violent gale last night, abating this forenoon.
26	7 a. m.	SE	High	Cloudy	Stormy all day.
27	7 a. m.	SE	Fresh	Clear	
28	7 a. m.	E	Light	Cloudy	Violent southerly gale last night.
29	7 a. m.	SE	Gale	Clear	
30	7 a. m.	SE	Fresh	Snowing	
31	7 a. m.	S.	Gale	Heavy snow	Violent southerly storm set in at midnight last night, changing later to NW.
June 1	7 a. m.			Light snow	
2	7 a. m.	SE	Fresh	Clear	Beautiful day.
3	7 a. m.	SE	do.	Fair	Strong gale last night, followed by fine weather to-day.
4	7 a. m.	SE	do.	Clear	
5	7 a. m.	Calm	0	do.	Fine clear day.
6	7 a. m.	Calm	0	do.	
7	7 a. m.	Calm	0	do.	
8	7 a. m.	Calm	0	do.	
9	7 a. m.	Calm	0	Cloudy	Clear in evening.
10	7 a. m.	Calm	0	do.	
11	7 a. m.	Calm	0	Clear	
12	7 a. m.	Calm	0	do.	
13	7 a. m.	S.	Gale	do.	
14	7 a. m.	Calm	0	Cloudy	
15	7 a. m.	Calm	0	Light snow	Followed by cloudy weather.
16	7 a. m.	NW	Fresh	Cloudy	Later, calm and clear.
17	7 a. m.	W.	do.	Fair	
18	7 a. m.	W.	do.	Cloudy	
19	7 a. m.	Calm	0	Clear	
20	7 a. m.	Calm	0	do.	Strong SE. gale set in at 11.30 a. m.
21	7 a. m.	S.	Gale.	Cloudy	Violent gale all day.

TABLE CLXXXIII.—*Daily mean pressure (after leaving Fort Conger) in Kennedy Channel, Kane Sea, and (after October 15) Camp Clay.*

$\phi = +78° 54'$ $\lambda = -74° 30'$

Date.	1883.					1884.				
	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.
1	30.022	29.935	30.155	29.700	29.768	**30.676**	29.283	29.820	30.242	30.245
2	29.993	.748	*.097*	.740	30.134	.634	.424	.604	.490	.214
3	.904	.524	*.039*	.700	**.378**	.608	.385	.791	.566	.200
4	.840	.456	29.980	.640	29.824	.060	.735	.976	**.680**	.307
5	.726	.358	.720	.647	.549	29.580	.944	.739	.622	**.344**
6	.612	**.216**	**.610**	.688	.672	.794	.916	.433	.209	.145
7	.737	.222	30.020	.789	.870	.265	.914	.334	.038	29.902
8	.891	.434	.135	.887	.929	**28.983**	.811	[illegible]	.020	30.181
9	.853	.611	.200	30.123	.931	29.270	.999	.633	.048	.152
10	.775	.616	.310	29.953	.855	30.087	.827	.824	.024	.240
11	**30.023**	.413	**.500**	.857	.858	29.938	.684	.820	29.994	.268
12	*29.926*	.613	.430	.807	30.051	.585	.718	.842	.881	.268
13	*.828*	.690	*.165*	.576	29.856	.606	.752	.713	30.207	.228
14	*.720*	.785	29.900	.686	.913	.910	.734	.854	.217	.105
15	*.633*	30.070	----------	.697	30.154	30.040	**30.107**	.971	29.925	.088
16	**.423**	.073	----------	**.197**	29.592	29.698	29.530	30.059	30.008	.085
17	.480	**.135**	----------	.571	**.463**	.573	**.276**	29.835	.275	.098
18	.643	29.940	----------	.396	.909	.524	.457	.582	.459	.160
19	.722	.860	----------	.587	.801	.563	.569	.808	.399	.172
20	.918	30.020	----------	.918	.842	.778	.838	.962	.213	29.874
21	.943	29.506	----------	.996	.677	30.018	.871	.910	.078	.775
22	.892	.800	----------	.937	.723	29.981	.378	.954	.008	**.659**
23	.846	.875	----------	.910	.768	.946	30.023	.793	.037	(*)
24	.847	.740	----------	30.030	.760	.955	29.829	.757	29.872	----------
25	.744	.860	----------	.241	.888	.909	.291	.719	.831	----------
26	.856	.870	29.850	.331	30.290	.849	.812	.747	.850	----------
27	.798	*.930*	30.065	**.356**	.205	.891	.841	.869	**.808**	----------
28	.800	*.990*	29.900	29.810	.071	.938	.782	.916	.970	----------
29	.947	*30.050*	30.045	.756	.114	.927	.927	30.318	30.053	----------
30	.960	.114	29.855	.559	.003	.664	----------	.277	.052	----------
31	30.014	----------	.835	----------	.138	.521	----------	**.352**	----------	----------
Means	29.817	29.748	30.041	29.803	29.903	29.831	29.712	29.823	30.136	30.123
Means in millimeters	757.34	755.58	763.03	756.99	759.53	757.75	754.67	757.49	765.44	765.11

*Barometer broken.

TABLE CLXXXIV.—*Daily mean temperatures (after leaving Fort Conger) in Kennedy Channel, Kane Sea, and (after October 15) Camp Clay.*

$\phi = +78° 54'$ $\lambda = -74° 30'$

Date.	1883.					1884.					
	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.
1	**39.0**	26.9	22.2	— 3.5	— 6.6	—32.0	—15.5	—**34.4**	4.5	8.0	35.0
2	33.9	26.1	**24.0**	7.7	*6.6*	28.0	27.5	23.1	—13.0	8.0	35.0
3	34.8	26.8	*16.4*	13.0	*7.3*	31.0	21.2	25.4	—13.0	0.8	**31.0**
4	33.7	25.9	8.8	22.5	— 8.0	34.0	22.2	21.5	8.0	5.7	36.5
5	34.1	21.8	12.0	16.5	+ **4.5**	25.2	23.0	21.4	— 9.7	12.1	32.5
6	35.0	24.3	8.7	16.0	—10.0	24.0	20.2	21.3	— 5.2	16.5	31.2
7	33.3	19.0	13.9	20.3	21.0	31.0	27.5	15.2	— 1.8	19.3	33.2
8	37.6	11.0	13.0	30.2	24.0	28.0	36.4	2.7	8.5	13.8	36.9
9	36.5	15.5	7.6	26.8	19.0	29.1	38.2	8.9	— 2.8	8.6	38.8
10	*35.7*	13.6	7.5	23.0	27.0	33.5	34.4	8.2	— 4.4	3.4	37.0
11	*34.8*	15.2	— 5.0	23.5	20.0	21.0	36.5	16.9	—18.7	**0.6**	39.3
12	*33.9*	18.0	—10.5	29.2	25.0	18.5	**42.0**	20.6	—**20.4**	5.0	36.2
13	33.0	12.2	3.0	30.4	23.0	21.4	34.3	21.3	—10.4	10.3	33.4
14	28.3	22.1	8.0	24.5	17.0	18.5	27.0	24.3	—11.1	12.9	39.8
15	28.6	**27.2**	0.2	36.4	17.0	27.5	23.6	26.3	—10.2	14.6	34.9
16	27.5	17.4	2.2	18.7	21.0	21.3	21.7	28.6	**10.7**	12.2	**40.0**
17	28.3	10.9	— 6.5	17.3	13.0	36.0	16.3	22.9	7.9	16.5	34.3
18	29.0	10.0	— 3.2	13.0	17.0	40.0	— 7.3	12.2	2.0	16.3	34.6
19	31.8	23.0	—11.0	34.5	21.0	**42.0**	+ **5.5**	12.6	— 0.8	26.0	36.6
20	29.2	21.7	— 5.2	16.0	25.0	**42.0**	— 6.2	16.9	— 1.9	23.0	31.7
21	30.2	25.6	0.0	18.8	29.0	34.0	5.8	17.7	1.4	**32.5**	**31.0**
22	33.3	**9.4**	— *8.0*	25.6	29.0	27.2	7.5	8.8	9.5	*28.9*	....
23	33.4	13.7	—16.0	32.6	24.5	20.2	5.2	21.7	7.5	*25.2*	....
24	33.0	13.4	— 3.5	25.0	22.5	20.2	13.3	22.0	0.8	21.5	....
25	34.3	11.1	— 2.8	24.0	35.5	22.0	12.5	20.0	4.8	26.0	....
26	25.7	15.1	—15.0	35.2	34.8	25.5	13.6	4.0	7.2	26.0	....
27	24.3	*16.1*	—**18.2**	**38.0**	**39.5**	35.5	24.2	10.3	4.9	24.0	....
28	25.1	*16.4*	— 9.8	22.5	35.0	37.4	25.9	21.0	7.3	24.0	....
29	27.2	16.8	5.0	9.5	31.5	32.0	—31.4	2.1	2.5	27.0	....
30	**22.5**	18.8	— 8.0	— **1.0**	21.2	35.0	....	— 4.2	7.4	28.0	....
31	28.7	....	0.0	....	—20.5	— **4.0**	....	+ **3.0**	....	*31.5*	....
Means	31.47	18.17	0.96	—21.82	—21.16	—28.29	—21.20	—16.56	— 0.95	17.04	35.19
Means in centigrade	—0.3	—7.7	—17.6	—29.9	—29.6	—33.5	—29.6	—27.0	—18.3	—8.3	1.8

TABLE CLXXXV.—*Comparative anemometer readings at Dutch Island and Fort Conger, 1882–'83.*

Date.	1882.															
	March.		April.		May.		June.		July.		August.		September.		October.	
	Miles at—		Miles at—		Miles at—		Miles at—		Miles at—		Miles at—		Miles at—		Miles at—	
	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.
1			134	11			[a]1,134	317	[b]1,156	475			[c]3,464	3,144	[d]1,679	663
2			96	14	161	61							29	40		
3			111	21	136	201							[e]990		[f]1,980	
4			68	37	39	133										
5			79	63							[g]1,650	687				
6			67	67	51	66							188	321		
7	([h])	([h])	170	43			[i]1,313	470					[j]990		767	932
8	150	12	1	6	137	277	90	56					497	682		
9	125	14	248	29					[k]1,732	998					88	85
10	80	13	88	64	53	116										
11			109	111											117	132
12			69	50			[l]273	252							50	52
13			33	39	[m]990				[n]1,164	421			422	253	74	44
14			66	44	388	326							104	187	28	34
15			50	55	37	26									135	162
16			132	89											38	57
17			96	53			664	614					126	143		
18			39	32	[o]990		[p]1,067	222					130	57	52	50
19	795	76	21	57	198	295							273	240	33	19
20			72	49	40	48							77	87	20	9
21			39	37	14	48	359	722	[q]1,834	1,081					74	180
22	209	143			40	67	[r]1,161	147					247	168	106	28
23			[s]1,461	553			86	62							38	29
24	131	28	96	58	153	92							519	455	46	19
25													[t]1,023	219	126	11
26	162	21			81	123			384	285			61	77	28	7
27							197	315	192	138					3	5
28	187	27	[u]990		[v]990				[w]1,273	355						
29	104	5	359	388	407	434	[x]1,248	649							95	55
30			51	38												
31	320	143							393	338					12	4
Total	2,263	482	4,745	2,008	4,905	2,313	7,592	3,826	8,128	4,091	1,650	687	9,140	6,073	5,589	2,577

[a] One revolution of dial (990 miles) added for storm on night of May 30.
[b] One revolution of dial (990 miles) added for storm of June 30.
[c] Three revolutions of dial (2,970 miles) added.
[d] One revolution of dial (990 miles) added for September 27.
[e] One revolution of dial (990 miles) added for September 2 and 3.
[f] One revolution of dial (990 miles) added for October 1 to 4.
[g] One revolution of dial (990 miles) added for storm of August 2.
[h] Anemometer No. 462 exposed at Dutch Island March 7, 1882. Height above sea level about 20 feet.
[i] One revolution of dial (990 miles) added for June 5.
[j] One revolution of dial (990 miles) added for September 6 and 7.
[k] One revolution of dial (990 miles) added for storm of July 7 and 8.
[l] Anemometer down for time; 50 miles added.
[m] Severe storm on 13th. One revolution of dial (990 miles) added.
[n] One revolution of dial (990 miles) added for storm of July 10.
[o] One revolution of dial (990 miles) added for storm on night of 15th and 16th.
[p] One revolution of dial (990 miles) added for storm of June 17.
[q] One revolution of dial (990 miles) added for storms of July 15, 16, and 20.
[r] One revolution of dial (990 miles) added for storm of June 20.
[s] Storm very severe. One revolution of dial (990 miles) added.
[t] One revolution of dial (990 miles) added.
[u] Storm very severe on 25th. One revolution of dial (990 miles) added.
[v] One revolution of dial (990 miles) added for storm of 27th and 28.
[w] One revolution of dial (990 miles) added for storm of July 27 and 28.
[x] One revolution of dial (990 miles) added for storm of June 28.

TABLE CLXXXV.—*Comparative anemometer readings at Dutch Island and Fort Conger, 1882-'83.*—Continued.

1882.								1883.																		
November.*				December.*				January.*				February.		March.				April.				
Miles at—				Miles at—				Miles at—				Miles at—		Miles at—				Miles at—				
Dutch Island.	Fort Conger.	Direction.	Velocity.	Dutch Island.	Fort Conger.	Direction.	Velocity.	Dutch Island.	Fort Conger.	Direction.	Velocity.	Dutch Island.	Fort Conger.	Dutch Island.	Fort Conger.	Direction.	Velocity.	Dutch Island.	Fort Conger.	Direction.	Velocity.	Date.
-----	-----	-----	-----	58	2	-----	-----	43	8	N.	1	29	2	68	5	N.	1	48	39	NW.	L.	1
-----	-----	-----	-----	30	4	N.	2	67	9	N.	1	30	9	53	6	NW.	L.	70	31	NW.	L.	2
-----	-----	-----	-----	-----	-----	-----	-----	85	15	NW.	4	14	7	37	5	0	0	60	40	0	0	3
46	42	N.	L.	79	7	N.	1	37	17	N.	1	26	14	38	3	NE.	2	60	42	0	0	4
-----	-----	-----	-----	26	3	0	0	46	10	SE.	1	14	1	53	8	NW.	3	38	44	0	0	5
-----	-----	-----	-----	16	26	N.	2	59	20	0	0	28	11	73	8	NE.	2	69	71	E.	2	6
-----	-----	-----	-----	53	9	N.	3	35	21	N.	1	28	23	92	42	N.	5	45	55	0	0	7
-----	-----	-----	-----	46	14	S.	4	34	14	E.	1	33	8	-----	-----	-----	-----	25	36	0	0	8
985	242	-----	-----	109	22	S.	Var.	47	12	N.	1	59	10	1,159	455	-----	-----	53	69	NW.	2	9
32	9	-----	-----	49	11	S.	1	-----	-----	-----	-----	38	17	83	11	0	0	92	34	NE.	1	10
15	7	-----	-----	30	17	NE.	-----	29	17	N.	2	46	16	40	3	E.	6	95	45	0	0	11
14	5	0	0	42	20	NE.	2	37	4	0	0	54	0	55	48	E.	2	35	49	0	0	12
45	32	N.	L.	24	3	NE.	1	3	6	N.	1	27	15	66	59	N.	1	50	29	0	0	13
5	29	NW.	L.	44	10	SE.	2	40	2	NW.	2	48	15	49	45	N.	2	27	47	0	0	14
44	33	SE.	Var.	65	9	N.	4	10	3	0	0	39	18	94	105	SE.	1	100	34	0	0	15
86	198	N.	3	68	8	N.	1	27	4	0	0	41	4	86	78	NW.	2	26	50	0	0	16
38	46	N.	2	50	4	0	0	-----	-----	-----	-----	35	5	101	67	NW.	2	49	46	N.	1	17
32	13	-----	-----	-----	-----	-----	-----	38	23	0	0	54	10	94	68	NW.	1	65	37	NW.	2	18
37	1	SE.	1	50	8	NW.	-----	14	1	0	0	62	7	102	57	NW.	2	65	33	0	0	19
18	18	0	0	-----	-----	-----	-----	23	3	0	0	70	1	109	60	NW.	2	21	59	0	0	20
12	15	E.	1	57	25	N.	2	16	2	E.	1	44	2	64	40	NW.	1	80	68	NW.	2	21
20	9	N.	2	80	15	N.	4	31	20	SE.	1	26	25	86	63	NW.	1	159	62	NW.	2	22
25	3	0	0	80	2	N.	1	19	5	0	0	23	14	57	44	SE.	[illegible]	51	15	0	0	23
13	1	N.	2	81	20	N.	1	65	24	NW.	Fresh.	27	10	103	169	NW.	2	68	21	NW.	L.	24
37	3	N.	2	132	94	S.	4	70	8	N.	2	45	5	73	71	0	0	41	18	NE.	L.	25
66	4	E.	L.	18	70	N.	2	49	6	N.	1	31	13	44	59	0	0	46	23	NW.	L.	26
31	15	N.	L.	30	21	N.	1	41	17	0	0	48	10	58	69	NE.	L.	27	25	0	0	27
10	5	N.	3	47	8	0	0	49	22	SW.	1	28	10	42	19	SE.	2	28	25	0	0	28
43	6	0	0	-----	-----	-----	-----	19	3	0	0	-----	-----	37	15	NW.	L.	59	23	0	0	29
17	8	N.	1	62	76	NW.	2	11	25	NW.	L.	-----	-----	26	38	NW.	L.	51	22	NE.	L.	30
-----	-----	-----	-----	68	153	N.	1	38	2	N.	1	-----	-----	47	43	NW.	L.	-----	-----	-----	-----	31
1,671	744	-----	-----	1,494	661	-----	-----	1,082	323	-----	-----	1,047	282	3,089	1,763	-----	-----	1,703	1,192	-----	-----	

* No sun during this month.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition.*

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1881.	*Inches.*	°	°	°					
Aug. 31, 11 a. m	29.71	30			NW	Fresh	Fair	17	West of Distant Cape.
31, 3 p. m	29.69	30			NW	Gentle	do	17	Nearly opposite Distant Cape.
31, 7 p. m	29.69	27			Calm	0	do	17	Nearly opposite Saint Patrick's Bay.
31, 11 p. m	29.60	23			NW	Brisk	do	17	Minimum thermometer lost overboard.
Sept. 1, 3 a. m	29.60	19.5			NW	Light	Clear	17	
1, 7 a. m	29.54	22			N	Brisk	Fair	17	Made landing 1 mile S. of Mount Beaufort.
1, 11 a. m	29.57	25			N	High	do	17	Fog on horizon.
1, 3 p. m	29.61	27			N	do	do	17	Channel filled with ice.
1, 7 p. m	29.58				NW	do	do	17	
1, 11 p. m	29.62				NW	Fresh	Cloudy	17	
2, 3 a. m	29.64				NW	do	do	17	
2, 7 a. m	29.66				NW	Light	do	17	
2, 11 a. m	29.72				NW	do	do	17	
Sept. 7, 11 a. m	29.63	21			NW	Moderate	Clear	19	Fort Conger to head of St. Patrick Bay and return.
7, 3 p. m	29.45	19.5			NW	Fresh	Light snow	19	
7, 7 p. m	28.76	21.5			Calm	0	Foggy	19	
7, 11 p. m	28.36	19.0			NW	Moderate	do	19	
8, 3 a. m	29.86	20.0			NW		Light fog	19	
8, 11 a. m	29.83	16			N	Fresh		19	
8, 3 p. m	29.82	19			N	Moderate		19	
Sept. 11, 3 p. m	29.39	16.2						22	Fort Conger to the Bellows and return.
11, 7 p. m	29.36	13.5						22	
11, 12 midnight	29.40	17						22	
12, 7.10 a. m	29.47	20						22	
12, 11 a. m	29.38	22						22	
12, 1.20 p. m	29.36	19.8						22	
12, 3 p. m	29.32	21						22	
12, 6.25 p. m	29.11	9						22	
12, 10.30 p. m	29.44	4						22	
13, 7.30 a. m	29.55	3.5						22	Minimum thermometer during night, +1°.
13, 11.15 a. m	29.52	8.5						22	
13, 3.45 p. m	29.80	11.0						22	
Sept. 24, 3 p. m	29.62	− 5.5						26	Fort Conger to Depot B and return.
24, 7 p. m	29.62	− 8						26	
25, 7 a. m	29.70	− 6						26	Minimum −14.5° during night of 24th.
25, 11 a. m	29.63	1						26	
25, 3 p. m	29.62	− 3						26	
26, 7 a. m	29.62	− 4						26	Minimum −11° during night of 25th.
26, 11 a. m	29.68							26	Thermometer left at Mount Beaufort.
26, 3 p. m	29.63							26	
26, 7 p. m	29.60	− 3						26	Minimum −9° during day.
27, 7 a. m	29.55	0						26	Minimum −5° during night of 26th.
27, 11 a. m	29.50							26	
27, 3 p. m	29.48							26	
Oct. 5, 7 p. m		−18			N	High		30	The "Bellows".
6, 7 a. m		−24			N	do		30	
6, 4 p. m		−18			N	do		30	
6, 4.20 p. m		−20			N	do		30	
6, 7 p. m		−25			N	do		30	
7, 7 a. m		−25			N	do		30	
Oct. 3, 7 p. m		−10			NE			35	Fort Conger to Mount Parry and return.
4, 7 a. m		−10.8			NE			35	Do.
4, 7 p. m		−15.0			Calm			35	Do.
5, 7 a. m		−12.4			Calm			35	Do.
5, 6 p. m		−11			N			35	Do.
6, 8 a. m		−13.5			NE			35	Do.
6, 7 p. m		−10.2			NE			35	Do.
7, 6 a. m		− 3.5			NE			35	Do.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1881.	*Inches.*	°	°	°					
Oct. 7, 8 p. m.		1.9			NE			35	Fort Conger to Mt. Parry and return.
Nov. 7		−35.0						35	Shift Rudder Bay.
1882.									
Mar. 1, 3 p. m.	29.65	−18.0			SE	Brisk	Light snow	39	Depot B.
2, 7 a. m.	29.36	−36.0		−38.0	NE	Light	Clearing	39	Do.
2, 11 a. m.	29.04	−35.0			NE	do	Fair	39	On the straits.
2, 1.13 p. m.	28.96	−37.0			NE	do	do	39	Do.
3, 7 a. m.	29.03	−36.0		−45.0	NE	do	Cloudy	39	On Greenland coast, N. of Cape Lupton.
3, 7 p. m.	29.54	−25.0			NE	Brisk		39	Thank God Harbor.
4, 7 a. m.	29.65	−37.0		−37.0	NE	Fresh	Fair	39	Do.
5, 7 a. m.		−50.5		−51.0	NE	Light	do	39	East of Hall's Rest.
5, 11 a. m.	29.68	−55.5			S	do	do	39	Do.
5, 2 p. m.	29.50	−52.0			NE	do	do	39	Do.
5, 4 p. m.	29.42	−51.0			NE	do	Cloudy	39	Do.
6, 6 p. m.	29.50	−36.5		−52.0	NE	Fresh	do	39	Do.
7, 8 a. m.	29.57	−49.5		−52.0	NE	do	do	39	Do.
7, 11 a. m.	29.52	−44.0			NE	Brisk	do	39	Do.
7, 5 p. m.	29.50	−42.0			NE	do	do	39	Do.
8, 8 a. m.	29.42	−35.0		−43.0	NE	do	do	39	Do.
8, 12 noon	29.28	−30.0			NE	do	Light snow	39	Do.
8, 4 p. m.	29.29	−33.5			NE	do	Foggy	39	Do.
9, 6 a. m.	29.41	−34.0		−35.0	NE	Light	Cloudy	39	
9, 11 a. m.	29.69	−39.0			NE	do	do	39	Newman Bay.
Mar. 14, 11.15 a. m.		−44.0		−49.8				44	To Greenland coast.
14, 1 p. m.	29.62	−44.0			Calm		Clear	44	
14, 3 p. m.	29.63	−46.0			Calm		Fair	44	
14, 7 p. m.	29.63	−53.5			Calm		do	44	Minimum set 7 p. m.
15, 7 a. m.	29.95	−50.0		−61.0	Calm		do	44	
15, 9 a. m.	29.72	−39.0			Calm		do	44	
15, 11 a. m.	29.69	−40.5			Calm		do	44	
15, 3 p. m.	29.72	−41.0			NE	Light	Clear	44	
15, 5 p. m.	29.70	−43.5						44	Minimum set 4.45 p. m.
16, 8 a. m.	30.02	−39.0		−44.0	NE	Brisk	Cloudy	44	
16, 11 a. m.	29.95	−35.0			NE	do	do	44	
16, 1 p. m.	29.96	−35.5			NE	Light	Fair	44	
16, 3 p. m.	29.98	−33.5			SE		Light snow	44	
16, 4 p. m.	30.02	−33.0			Calm		do	44	
17, 7 a. m.	30.31	−35.0		−43.0	Calm		Fair	44	
17, 9 a. m.	30.27	−33.0			NE	Fresh	Cloudy	44	
17, 3 p. m.	30.27	−35.5			NE	Brisk	do	44	Minimum set 3 p. m.
17, 5 p. m.	30.38				NE	do	do	44	
18, 8 a. m.	30.35	−41.0		−43.2	NE	Fresh		44	
18, 12 noon	30.23	−34.5			NE	do		44	
18, 2 p. m.	30.22	−31.2			NE	Light	Fair	44	Minimum set 2.30 p. m.
19, 5 a. m.	30.25	−28.5		−36.0	SE	do	Cloudy	44	
19, 6 a. m.	30.22	−28.0			SE	do	do	44	
19, 7 a. m.	30.23	−27.0			SE	Fresh	Light snow	44	
19, 10 a. m.	30.23	−26.8			Calm		Fair	44	
19, 11.38 a. m.		−37.5						44	Minimum at Cape Murchison.
19, 1 p. m.	30.45	−33.0		−57.0	N	Fresh	Fair	44	
19, 7 p. m.	30.43	−37.0			N	Light	do	44	Minimum set 7 p. m.
20, 3 a. m.	30.38	−37.0		−38.0	NW	do	do	44	
20, 9.05 a. m.		−28.0		−43.8				44	Minimum thermometer at Cape Murchison.
Mar. 20, 7 a. m.	30.20	−31.0		−41.0	E	Light	Light snow	45	To Lincoln Bay; Depot B, minimum set 7 p. m., 19th.
20, 10 a. m.	30.04	−27.0			E	do	do	45	Do.
20, 5 p. m.	29.87	−20.0			SE	Brisk	Cloudy	45	Between Cape Beechey and Wrangel Bay; minimum set 7 p. m.
21, 9 a. m.	29.71	−10.0		−22.0	SE	Light	do	45	Between Cape Beechey and Wrangel Bay.
21, 11 a. m.	29.67	−10.0			SE	Fresh	do	45	Do.
21, 7 p. m.	29.51	−20.0			SE	Light	Fair	45	Wrangel Bay; minimum set 7 p. m.
22, 7 a. m.	29.33	−20.0		−24.0	E	do	do	45	Wrangel Bay.
22, 1 p. m.	29.22	−36.0			Calm		do	45	Three miles S. of Cape Frederick.
22, 7 p. m.	29.15	−35.0			E	Gentle	do	45	Lincoln Bay; minimum set 7 p. m.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1882.	*Inches.*	°	°	°	°				
Mar. 23, 8 a. m.	29.21	−23.0		−40.0	E	Light	do	45	Lincoln Bay.
23, 8 p. m.	29.32	−37.0			Calm		Cloudy	45	Between Cape Beechey and Wrangel Bay; minimum set 8 p. m.
24, 7 a. m.	29.43	−45.0		−53.0	Calm		Clear	45	Between Cape Beechey and Wrangel Bay.
24, 7 p. m.	29.58	−49.0			SE	Fresh	Clear	45	Depot B; minimum set, 7 p. m.
25, 5 a. m.	29.65	−48.0		−51.0	Calm		Fair	45	Depot B.
25, 7 a. m.	29.61	−46.0			Calm		Foggy on straits	45	Do.
25, 11 a. m.	29.56	−40.0			S	Light	Clear	45	Cape Beechey; minimum set, 11 p. m.
26, 11 a. m.	29.60	−36.0		−51.0	Calm		do	45	Depot E.
26, 11 p. m.	29.61	−32.0			SW	Light	Cloudy	45	Depot B; minimum set, 11 p. m.
27, 11 a. m.	29.57	−29.0		−40.0	SW	Fresh	Fair	45	Depot B.
27, 3 p. m.	29.56	−27.0			SW	do	Fair	45	Do.
27, 7 p. m.	29.57	−31.0			SW	do	do	45	Depot B; minimum set, 7 p. m.
28, 5 a. m.	29.56	−43.0		−45.0	Calm		Clear	45	Depot B.
28, 11 a. m.	29.47	−32.0			S	Fresh	do	45	Cape Beechey.
28, 7 p. m.	29.44	−46.0			SW	Gentle	do	45	Floe 5 miles from Cape Beechey; minimum set, 6 p. m.
29, 7 a. m.	29.21	−28.0		−50.0	NE	Fresh	Cloudy	45	Floe 5 miles from Cape Beechey.
29, 3 p. m.	29.01	−33.0			NE	do	Fair	45	Depot E.
29, 7 p. m.	28.91	−50.0			SE	do	do	45	Floe 5 miles from Cape Beechey.
30, 1 p. m.	29.38	−21.0		−50.0	SW	do		45	Depot E; minimum set, 1 a. m.
Mar. 19, 3.40 p. m.		−34.0						47	Shift Rudder Bay.
20				−39.0				47	
22, 9.30 a. m.		−20.0		−24.0				47	
22, 1 p. m.		−36.0						47	
22, 5 p. m.		−30.0						47	
23, 12 noon		−23.0						47	
23, 7 p. m.		−39.5		−40.0				47	Minimum during night.
24, 6 a. m.		−45.0		−56.2				47	Do.
24, 8 a. m.		−43.0						47	
24, 11 a. m.		−39.0						47	
24, 6 p. m.		−36.5						47	
25, 3 p. m.		−27.0		−38.0				47	Minimum during night.
25, 12 midnight		−32.0						47	
26, 10.30 a. m.		−33.0		−37.0				47	Do.
26, 5 p. m.		−34.5						47	
27, 10 a. m.		−23.0		−44.0				47	Do.
27, 3 p. m.		−20.0						47	
27, 4 p. m.		−21.5						47	
27, 6 p. m.		−11.5						47	
28, 6 a. m.		−15.0		−25.0				47	Do.
28, 7 a. m.		−20.0						47	
28, 11 a. m.		− 5.0*						47	
28, 11 a. m.		−18.0						47	
28, 8 p. m.		−25.0						47	
29, 10 a. m.		−33.0		−43.0				47	Do.
29, 3 p. m.		−29.0						47	
29, 7 p. m.		−36.5						47	
30, 12 noon		−15.0		−52.0				47	Do.
30, 3 p. m.		− 8.5						47	
30, 7 p. m.		−10.5						47	
31, 6 a. m.		−12.5		−15.0				47	Do.
31, 8 a. m.		−14.0						47	
31, 1 p. m.		−17.0						47	
31, 4 p. m.		−27.5						47	
Apr. 1, 12 noon		−30.0		−35.0				47	Do.
1, 4 p. m.		−38.8						47	
2, 1 a. m.		−42.0		−56.0				47	Do.
6, 9.30 p. m.		−30.0						47	
7, 5 a. m.		−26.0		−26.5				47	Minimum during day.
7, 8 p. m.		−26.0						47	
8, 12.30 a. m.		−12.0						47	
8, 4 a. m.		−14.0						47	
8, 7 p. m.		− 4.0						47	

* In sun.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit. Exp'd.	Max.	Min.	Wind. Direction.	Velocity.	Weather.	Appendix.	Remarks.
1882.	*Inches.*	°	°	°					
Apr. 8, 8 p. m.		4.8						47	
9, 7 a. m.		6.5						47	
10, 5 a. m.		0.0						47	
11, 3 a. m.		10.0						47	
11, 1 p. m.		12.0						47	
11, 2 p. m.		17.0						47	
12, 1 a. m.		3.5		— 2.0				47	Minimum during rest.
12, 6 a. m.		0.0						47	
12, 9 a. m.		4.0						47	
13, 11 a. m.		6.5						47	
14, 3 a. m.		0.0						47	
14, 2 p. m.		— 5.0						47	
14, 5 p. m.		—10.0						47	
14, 7 p. m.		—13.5						47	
15, 1 a. m.		10.0						47	
16, 6 a. m.		0.0						47	In tent, 29°.0.
17, 12 noon		8.5						47	
17, 7 p. m.		1.0						47	
18, 10 a. m.		— 5.5						47	
18, 11 p. m.		—10.0						47	
19								47	Oscillating all day between — 10 and + 12.
26, 9 a. m.		— 3.0						47	
26, 9 p. m.		—10.0						47	
27, 10 a. m.		— 5.5						47	
27, 8 p. m.		— 4.0						47	
28, 7 a. m.		— 5.0						47	
28, 7 p. m.		— 6.5						47	
29, 3 a. m.		— 7.0						47	
29, 9 p. m.		—10.0						47	
30, 4 a. m.		— 1.0						47	
30, 6 p. m.		0.0						47	
May 1, 9 a. m.		1.0						47	
1, 9 p. m.		13.0						47	
May 26, 7 a. m.	30.23	7.5			Calm			50	To the Bellows, head Basil Norris Bay, Clouds: cirro-stratus, 4; direction, N°.
26, 6.25 p. m.	30.16	14.0	20.0	7.0	NW	Light	Clear	50	The Bellows. Clouds: cirrus, 2; direction, o.
26, 8.45 p. m.	30.16							50	The Bellows.
26, 9.40 p. m.		23.0						50	Do.
27, 1 a. m.	30.05	34.0			N	Light	Cloudy	50	The Bellows. Clouds: amount, 8.
27, 11.30 a. m.	30.05	35.0	45.0	30.0	S	Moderate	do	50	The Bellows. Clouds: upper, hidden; lower, 10; direction, o.
27, 1.15 p. m.	30.00	34.5						50	The Bellows.
27, 5 p. m.	29.95	32.9			S	Strong	Cloudy	50	The Bellows. Clouds: upper, hidden, lower, 10; direction, o.
28, 12.02 a. m.	29.96	29.5	42.0	29.0	S	Light	do	50	The Bellows. Clouds: upper, hidden; lower, 10; direction, NEʳ.
28, 6.55 a. m.	29.85	31.5						50	The Bellows.
28, 9.05 a. m.	29.86	33.1						50	Barometer top of mountain, 28.30.
29, 3.30 a. m.	29.78	31.9						50	Do.
29, 7 a. m.	29.94							50	Do.
29, 8.50 a. m.	29.91	40.8					Fair	50	Barometer top of mountain, 28.30. Clouds: amount, 4.
29, 4.30 p. m.	29.95	36.0						50	Barometer top of mountain, 28.30.
30, 9.50 a. m.	30.10	27.0			E	Strong	Snow	50	Clouds: upper, hidden; lower, 10; direction, o.
Apr. 3, 12 mdt	29.83	—32.0						53	Cape Murchison; minimum set, 10.55 a. m.
4, 3 a. m.	29.65	—32.0		—41.0				53	Cape Murchison.
4, 8.45 p. m.		—29.0					Light snow	53	Depot B; minimum set, 8 p. m.
4, 12 mdt	29.62	—28.5					do	53	Depot B.
5, 3 p. m.	29.78	—22.0		—29.5	NW		Fair	53	
5, 12 mdt	29.62	—27.0						53	On the march.
6, 4.20 a. m.		—46.0						53	On the strait; minimum set, 6 a. m.
6, 6 a. m.	29.62	—40.0			Calm		Fair	53	On the strait.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit. Exp'd.	Max.	Min.	Wind. Direction.	Velocity.	Weather.	Appendix.	Remarks.
1882.	*Inches.*	°	°	°					
Apr. 6, 8 p.m.	29.55	−33.0		−48.8	E	Light	do	53	On the strait.
6, 12 mdt	29.62	−29.0			SE	Brisk	Cloudy	53	On the march.
7, 3.30 a.m.		−20.8			SW	do		53	On the strait; minimum set, 4 a.m.
7, 7 a.m.	29.67	−25.5			SE	Fresh	Fair	53	On the strait.
7, 8 p.m.	29.80	−19.5		−28.0				53	Do.
7, 12 mdt	29.82	−17.8			SE	Fresh	Light snow	53	On the march.
8, 9 p.m.	30.47	10.0			SW	Gale		53	On the strait.
9, 1 a.m.	30.55				SW	do		53	Do.
9, 9 a.m.	30.80				SW	do		53	Do.
9, 8 p.m.	30.78	2.0			SW	Brisk		53	Do.
9, 12 mdt	30.62	9.5			SW	Fresh		53	On the march.
11, 12 mdt		3.5						53	Polaris boat camp.
12, 6 a.m.		− 6.0			Calm		Clear	53	Do.
13, 8.30 a.m.		− 3.0					Fair	53	Polaris boat camp; minimum set, 8.30 a.m.
14, 8 a.m.	29.25	8.0		− 7.0	SW		do	53	Polaris boat camp; minimum set, 8 a.m.
15, 8 a.m.	29.02	10.3		7.2				53	Do.
16, 9 a.m.	28.88	12.3		3.8	NE	Brisk		53	Polaris boat camp.
16, 8 p.m.	28.83	3.0			E	Light	Fair	53	Do.
16, 12 mdt	28.76	− 9.0			E	do	Clear	53	On the march, Newman Bay.
17, 9 a.m.	28.85	11.0			Calm		Fair	53	Brevoort Peninsula; minimum set, 9 a.m.
17, 9 a.m.	28.93	− 3.0		− 3.0	Calm		Light snow	53	Brevoort Peninsula.
17, 12 mdt	28.88	− 9.5			Calm		Fair	53	On the march.
18, 7 a.m.	28.74	− 3.8			Calm		Clear	53	Camp VIII, Brevoort Peninsula; minimum set, 7 a.m.
18, 10 p.m.	28.75	− 9.0		−10.0	Calm		Cloudy	53	Camp VIII, Brevoort Peninsula.
18, 12 mdt	28.70	− 8.0			Calm		Light snow	53	On the march.
19, 7 a.m.	28.62	−13.0						53	Camp IX, Brevoort Peninsula; minimum set, 7 a.m.
19, 9 p.m.	28.73	−14.0		−15.0	Calm		Light snow	53	Camp IX, Brevoort Peninsula.
20, 2 a.m.	28.45	−14.0			Calm		do	53	On the march, Summit Divide.
20, 6 a.m.	28.60	−19.5			Calm		do	53	Camp X, Brevoort Peninsula; minimum set, 6 a.m.
20, 11 p.m.	28.60	−38.0		−40.0	do		Clear	53	Camp X, Brevoort Peninsula.
21, 9 a.m.	29.25	− 5.0			SE	Brisk	do	53	Camp XI, Brevoort Peninsula; minimum set, 9 a.m.
21, 11 p.m.	28.98	− 3.0		− 7.0	SE	do	Cloudy	53	Camp XI, Brevoort Peninsula.
22, 8 a.m.		8.0				40 miles, estimated.		53	Camp XII, coast near Repulse Harbor; minimum set, 8 a.m.
23, 4 a.m.	29.35	8.0		7.0				53	Camp XII, coast near Repulse Harbor.
23, 6 p.m.	29.57	14.0						53	Camp XIII, Snow Slopes; minimum set, 6 p.m.
24, 8 a.m.	29.17	6.5		4.0	SE	Brisk	Fair	53	Camp XIII, Snow Slopes.
24, 6 p.m.	29.25	11.5			SE	Fresh	Light snow	53	Camp XIV, Black Horn Cliffs; minimum set, 6 p.m.
25, 7 a.m.	29.43	14.5		9.0	Calm		do	53	Camp XIV, Black Horn Cliffs.
25, 12 noon	29.45	3.0			Calm		Fair	53	Camp XV, south Cape Stanton; minimum set, 12 noon.
26, 6 a.m.	29.53	− 5.5		−15.0	Calm		Clear	53	Camp XV, south Cape Stanton.
26, 7 p.m.		−14.0						53	Camp XVI, north side Hand Bay; minimum set, 7 p.m.
27, 7 a.m.	29.55	−17.0		−23.5	N		Clear	53	Camp south side Frankfield Bay.
27, 8 p.m.	29.55	−14.0			SW		Cloudy	53	Camp XVII, Cape Bryant; minimum set, 8 p.m.
28, 12 noon	29.45	−14.0		−16.0	Calm		Clear	53	Camp XVII, Cape Bryant.
28, 8 p.m.	29.47	−16.0			Calm		do	53	Camp XVII, Cape Bryant; minimum set, 8 p.m.
29, 8 a.m.	29.53	−11.5		−22.0	Calm		do	53	Camp XVII, Cape Bryant.
30, 1.05 p.m.	29.40	− 6.0		−14.0				53	Opposite Beaumont Fiord; in tent, thermometer +24.0°.
30, 3.40 p.m.	29.40	− 0.5						53	
May 1, 1 a.m.	29.47	21.0						53	
1, 3 a.m.	29.47							53	
1, 3.20 a.m.	29.46	29.5						53	Opposite Cape May.
1, 7.48 p.m.	29.375	− 1.0			NE	Light		53	

NOTE.—Fort Conger to Boat Camp, April 3 to 16: Mean thermometer, −15.77°; number of observations, 32; mean barometer, 29.74; number of observations, 21. Boat Camp to Cape Bryant, April 16 to April 29: Mean thermometer, −7.36°; number of observations, 39; mean barometer, 29.09; number of observations, 25.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1882.	*Inches.*	°	°	°					
May 1, 9.40 p.m.		— 1.0						53	
2, 9 a.m.	29.40							53	
2	29.35	22.0*			Calm		Clear	53	On floe, west of Stephenson Island.
2, 5.35 p.m.	29.32	8.5						53	
3	29.43	26.5						53	In tent, 36.5°.
3	29.47	19.0						53	
4, 4.30 a.m.	29.57	8.5					Light snow	53	
4, 7 a.m.	29.62	27.0						53	
4, 4.45 p.m.	29.46	(†)			Calm		Clear	53	In tent, 40.0°.
5, 1 a.m.	29.52	2.0			Calm			53	
5, 2.43 a.m.	27.32	14.5						53	Summit.
5, 5 a.m.	29.48	12.0						53	In camp.
6, 12.50 a.m.	29.37	7.5			Calm		Clear	53	
6, 1 p.m.	29.37	22.5			S	Light		53	
7, 2.55 a.m.	29.30	22.5			W	do	Clear	53	
7, 9 p.m.	29.28	16.0		10	Calm		Snow	53	
7, 10.45 p.m.	29.28	15.5			Calm		do	53	
8, 4.25 a.m.	29.32	17.5					Light snow	53	
8, 8.30 a.m.	29.42	28.0						53	
8, 6 p.m.	29.40	10.0					Light snow	53	
8, 10.50 p.m.					W		Cloudy	53	
9, 9 a.m.	29.43	12.0				High	Snow	53	
11, 3.15 a.m.	29.42	9.0						53	
11, 4.10 a.m.		10.0						53	Barometer out of order.
11, 9.20 a.m.		6.0‡					Snow	53	
12, 2.45 a.m.							do	53	
12, 9 p.m.	29.35	9.0						53	
13, 12.30 a.m.	29.30	11.0			NW		Snow	53	
May 31, 5.15 a.m.	30.36							54	To Black Rock Vale, "Bellows."
31, 7 a.m.	30.38							54	
31, 4 p.m.	36.34							54	
31, 7 p.m.	30.31							54	Knife Edge.
31, 8.05 p.m.	30.30							54	
31, 9.35 p.m.	30.30							54	
June 1, 1 a.m.	30.13							54	Point B.
1, 4 a.m.	30.25							54	
1, 10.15 a.m.	30.30							54	
2, 2 a.m.	30.15							54	
June 6, 2.45 p.m.	29.78							55	To Lake Hazen.
6, 4.35 p.m.	29.61							55	
7, 8.41 a.m.	29.64							55	
7, 11.34 a.m.	29.52							55	
7, 12.31 p.m.	29.52							55	
7, 2.17 p.m.	29.28							55	
7, 3.30 p.m.	29.35							55	
7, 10.55 p.m.	29.78							55	
8, 1.20 a.m.	29.78							55	
1883.									
Mar. 10, 12 noon	30.10	—39.1			NE	Light	Fair	66	To Lincoln Bay; Depot A.
10, 6 p.m.	30.15	—43.0			NE	do	do	66	Depot B.
11, 9 a.m.	29.73	—44.0		—48.0	NE	do	do	66	Depot B; minimum set, 9 a.m.
12, 8 a.m.	30.00				S	Fresh	do	66	Between Beechy and Wrangel Bay; heavy wind during night.
13, 7 a.m.	29.62				NE	do	do	66	Off Wrangel Bay.
13, 1 p.m.		—35.0		—48.0	NE	do	do	66	Depot B.
13, 7 p.m.	29.48				NE	do	do	66	Wrangel Bay.
14, 7 p.m.	29.53				S	do	do	66	Lincoln Bay.
15, 8 a.m.	29.85				S	Brisk	do	66	Lincoln Bay; gale during night.
15, 7 p.m.	30.10				SW	Light	do	66	Wrangel Bay.
16, 7 a.m.	30.21				Calm		do	66	Do.
16, 3 p.m.	30.21	(§)			NE	Brisk	do	66	Depot B.
17, 7 a.m.	30.10	—24.0			SW	Fresh	do	66	Depot B; gale during night.
17, 5 p.m.	29.99	—24.0			S	Light	do	66	Depot B.

* In sun. † Column separated. ‡ In tent. § Warm.

NOTE.—Cape Bryant to Cape Britannia, April 29 to May 5: Mean temperature, +9.91°; number of observations, 18; mean barometer, 29.43; number of observations, 19. Cape Britannia to Farthest, May 5 to May 15: Mean temperature, +12.34°; number of observations, 32; mean barometer, 29.39; number of observations, 23.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit. Exp'd.	Max.	Min.	Wind. Direction.	Velocity.	Weather.	Appendix.	Remarks.
1883.	*Inches.*	°	°	°					
Mar. 27, 4 p.m.	29.90	—11.0			SW	Light	Fair	71	Cape Beechey.
28, 7 a.m.	29.92	— 9.0		—12.0	Calm		Light snow	71	Do.
28, 5 p.m.	29.96	— 7.0			Calm		do	71	Robeson Channel, near Cape Sumner.
29, 7.30 a.m.	29.91	— 7.0		—10.0	S.	Brisk	Cloudy	71	Robeson Channel, near Cape Sumner; high wind during night.
29, 7 p.m.	29.91	— 7.0			SW	Fresh	Threatening	71	Newman Bay.
30, 7 a.m.	29.99	— 8.0		—12.0	SW	Light	Light snow	71	Newman Bay.
30, 7 p.m.	29.22	—12.0			Calm		Fair	71	On divide in Gap Valley.
31, 7 a.m.	29.09	—28.0		—36.0	Calm		Clear	71	Do.
31, 5 p.m.	29.71	—22.0			SW	Light	Fair	71	North end of Gap Valley.
Apr. 1, 7 a.m.	29.50	—30.0		—34.0	N	do	Clear	71	Do.
1, 7 p.m.	29.61	—40.0			Calm		Fair	71	Near Black Horn Cliffs; water clouds over northern sky.
2, 7 a.m.	29.61	—37.0			SW	Light	do	71	Near Black Horn Cliffs.
2, 1 p.m.	29.68	—28.0			NE	do	do	71	Do.
2, 2 p.m.	29.65	—33.0		—45.0	NE	do	do	71	Do.
2, 3 p.m.	29.71	—36.0			NE	do	do	71	Do.
2, 4 p.m.	29.72	—42.0			Calm		do	71	Near Black Horn Cliffs. Clouds: stratus; amount, 2; direction, 0.
2, 5 p.m.	29.72	—42.0			Calm		do	71	Near Black Horn Cliffs. Clouds: stratus; amount, 3; direction, 0.
2, 6 p.m.	29.71	—40.0			Calm		do	71	Near Black Horn Cliffs. Clouds: stratus; amount, 4; direction, 0.
2, 7 p.m.	29.60	—38.0			NE	Light	do	71	Do.
2, 9 p.m.	29.61	—42.0			Calm		do	71	Near Black Horn Cliffs. Clouds: stratus; amount, 6; direction, 0.
3, 8 a.m.	29.68	—22.0		—52.0	NE	Light	Cloudy	71	Near Black Horn Cliffs. Clouds: stratus; amount, 10; direction, 0.
3, 9 a.m.	29.69	—22.0			NE	do	do	71	Do.
3, 10 a.m.	29.58	—19.0			NE	do	do	71	Do.
3, 11 a.m.	29.62	—23.0			NE	do	do	71	Do.
3, 12 noon	29.61	—22.0			NE	do	do	71	Do.
3, 1 p.m.	29.63	—24.0			NE	do	do	71	Do.
3, 2 p.m.	29.61	—30.0			NE	do	Fair	71	Near Black Horn Cliffs. Clouds: stratus; amount, 7; direction, 0.
3, 3 p.m.	29.60	—34.0			NE	do	do	71	Near Black Horn Cliffs. Clouds: Upper, cirro-cumulus; amount, 3; direction, 0; lower, stratus; amount, 3; direction, 0.
3, 5 p.m.	29.41	—35.0			NE	do	do	71	Near Black Horn Cliffs. Clouds: Upper, cirro-stratus; amount, 3; direction, 0; lower, stratus; amount, 3; direction, 0.
3, 7 p.m.	29.57	—38.0			Calm		Cloudy	71	Near Black Horn Cliffs. Clouds: Upper, cirro-stratus; amount, 3; direction, 0; lower, stratus; amount, 1; direction, 0.
4, 10 a.m.	29.51	—10.0		—43.0	SW	Light	do	71	Near Black Horn Cliffs.
5, 12 noon	30.05				SE	Gale		71	Abont 4 miles from Repulse Harbor. Overtaken at 1 p.m. of the 4th by a severe SE. gale while passing over the snow slopes. Went into camp, where we were obliged to remain for over forty hours. Gale abated early morning of the 6th.
5, 3 p.m.	30.01				SE	do		71	About 4 miles from Repulse Harbor.
5, 7 p.m.	30.02				SE	do		71	Do.
6, 10 a.m.	30.13	— 7.0			SE	Fresh	Cloudy	71	Do.
6, 8 p.m.	29.79	—24.0			SW	Light	Fair	71	Do.
7, 7 a.m.	29.69	—10.0		—32.0	NE	do	Cloudy	71	Do.
7, 10 a.m.	29.71	— 6.0			SW	do	Snow	71	Do.
7, 12 noon	29.76	—12.0			SW	do	do	71	Do.
7, 1 p.m.	29.79	—13.0			SW	Fresh	Cloudy	71	Do.
7, 2 p.m.	29.80	—14.0			SW	do	Snow	71	Do.
7, 3 p.m.	29.80	—15.0			SW	Brisk	do	71	Do.
7, 6 p.m.	29.81	—16.0			SW	do	Cloudy	71	Do.
7, 7 p.m.	29.79	—14.0			SW	do	do	71	Do.
7, 8 p.m.	29.91	—14.0			SW	do	do	71	Do.
7, 9 p.m.	29.92	—14.0			SW	do	do	71	Do.
7, 10 p.m.	29.99	—12.0			SW	do	do	71	Do.
8, 8 p.m.	29.82	—29.0		—30.0	SW	Gentle	Fair	71	Cape Sumner.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1883.	*Inches.*	°	°	°					
Apr. 9, 9 a.m.	29.68	−12.0			SE	Light	Cloudy	71	Cape Sumner.
9, 11 a.m.	29.65	−13.0			SE	do	Fair	71	Do.
9, 1 p.m.	29.63	−9.0			SE	do	Cloudy	71	Do.
9, 2 p.m.	29.62	−10.0			SE	do	do	71	Do.
9, 3 p.m.	29.62	−13.0			SW	do	Fair	71	Do.
9, 4 p.m.	29.61	−16.0			SE	do	do	71	Do.
9, 5 p.m.	29.60	−18.0			SE	Fresh	do	71	Do.
9, 7 p.m.	29.59	−16.0			NE	Light	Cloudy	71	Do.
9, 8 p.m.	29.61	−14.0			NE	do	Fair	71	Do.
9, 9 p.m.	29.62	−18.0			Calm		do	71	Do.
9, 10 p.m.	29.64	−24.0			Calm		do	71	Do.
9, 11 p.m.	29.62	−32.0			Calm		do	71	Do.
10, 8 a.m.	29.71	−31.0		−34.0	Calm		Clear	71	Do.
10, 7 p.m.	30.00*	−30.0			SW	Fresh	do	71	Robeson Channel. Strong SW. wind blowing while crossing Robeson Channel.
11, 6 a.m.	29.95	−24.0		−45.0	Calm		do	71	Robeson Channel.
11, 5 p.m.	29.88*	−29.0			NE	Light	Fair	71	Depot B.
12, 7 a.m.	30.00*	−24.0		−36.0	NW	do	do	71	Do.
Apr. 10, 6 p.m.		−18.0						72	Six miles from Distant Cape.
10, 6.30 p.m.		−25.0						72	Do.
10, 7.10 p.m.		−32.0†						72	Do.
11, 3 a.m.		−28.0						72	Do.
11, 5 a.m.		−25.0						72	Do.
11, 1 p.m.					SW. and NE.	About 18 miles.		72	
11, 4 p.m.		−12.0						72	
12, 1 a.m.		−10.0				Light		72	About 7 miles from Hall's Rest.
12, 4 p.m.		−5.0						72	
13, 1 a.m.		−13.5						72	
13, 3 a.m.					NW	Light	Cloudy	72	
13, 12 noon		−9.5					do	72	
13, 10 p.m.					N	28 to 30 m.		72	
14, 7 a.m.		−13.5						72	
14, 8 a.m.		−14.0						72	
14, 9 a.m.					NNE	8 to 10 m.		72	
14, 6 p.m.		−16.5						72	
14, 7 p.m.		−18.0						72	
May 7, 12 noon	30.49	22.0			Calm		Clear	74	At Cape Beechey, Grinnell Land, latitude 81° 52.5′ N.
7, 1 p.m.	30.49	20.0			S	Light	do	74	Do.
7, 2 p.m.	30.37	23.0			S	do	do	74	Do.
7, 3 p.m.	30.39	22.0			Calm		do	74	Do.
7, 4 p.m.								74	Do.
7, 5 p.m.								74	Do.
7, 6 p.m.	30.55	19.0			Calm		Clear	74	Do.
7, 7 p.m.	30.58	18.0			Calm		do	74	Do.
7, 8 p.m.	30.58	8.5			Calm		do	74	Do.
7, 9 p.m.	30.59	6.0			Calm		do	74	Do.
7, 10 p.m.	30.60	4.5			Calm		do	74	Do.
7, 11 p.m.	30.55	4.0			NE	Light	do	74	Do.
7, 12 mdt	30.53	3.0			Calm		do	74	Do.
8, 1 a.m.	30.53	8.0			Calm		do	74	Do.
8, 2 a.m.	30.54	13.5			Calm		do	74	Do.
8, 3 a.m.	30.54	11.0			Calm		do	74	Do.
8, 4 a.m.	30.54	11.9			Calm		do	74	Do.
8, 5 a.m.	30.54	10.9			N	Light	do	74	Do.
8, 6 a.m.	30.55	7.0			Calm		do	74	Do.
8, 7 a.m.	30.59	4.8			Calm		do	74	Do.
8, 8 a.m.	30.58	5.0			S	Light	do	74	Do.
8, 9 a.m.	30.55	9.0			Calm		do	74	Do.
8, 10 a.m.	30.59	12.0			SW	Light	do	74	Do.
8, 11 a.m.	30.59	13.0			Calm		do	74	Do.
8, 12 noon	30.51	12.0			Calm		do	74	Do.
8, 1 p.m.	30.53	14.5			SW	Light	do	74	Dc.

* Barometer No. 16. † Estimated.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1883.	*Inches.*	°	°	°	°				
May 8, 2 p.m.	30.54	11.0			SW	Light	Clear	74	At Cape Beechey, Grinnell Land, latitude 81° 52.5′ N.
8, 3 p.m.	30.56	9.5			Calm		do	74	Do.
8, 4 p.m.	30.58	4.0			Calm		do	74	Do.
8, 5 p.m.	30.60	3.5			Calm		do	74	Do.
8, 6 p.m.								74	Do.
8, 7 p.m.	30.61	13.0			Calm		Clear	74	Do.
8, 8 p.m.	30.61	6.0			Calm		do	74	Do.
8, 9 p.m.	30.60	4.3			Calm		do	74	Do.
8, 10 p.m.	30.61	6.3			Calm		do	74	Do.
8, 11 p.m.	30.59	6.0			S	Light	do	74	Do.
8, 12 mdt								74	Do.
9, 1 a.m.	30.59	14.0			Calm		Clear	74	Do.
9, 2 a.m.	30.59	13.5			Calm		do	74	Do.
9, 3 a.m.	30.59	11.5			Calm		do	74	Do.
9, 4 a.m.	30.59	11.0			Calm		do	74	Do.
9, 5 a.m.	30.59	12.5			Calm		do	74	Do.
9, 6 a.m.								74	Do.
9, 7 a.m.	30.58	13.0			E	Light	Clear	74	Do.
9, 8 a.m.	30.53	17.6			Calm		do	74	Do.
9, 9 a.m.	30.51	13.0			Calm		do	74	Do.
9, 10 a.m.	30.52	18.5			Calm		Fair	74	Do.
9, 11 a.m.	30.50	19.0			Calm		do	74	Do.
9, 12 noon	30.49	24.0			Calm		do	74	Do.
9, 1 p.m.	30.49	20.2			Calm		do	74	Do.
9, 2 p.m.	30.43	20.5			Calm		Clear	74	Do.
9, 3 p.m.	30.42	19.0			Calm		do	74	Do.
9, 4 p.m.	30.41	17.0			Calm		do	74	Do.
9, 5 p.m.	30.41	10.0			N	Light	do	74	Do.
9, 6 p.m.	30.41	18.0			Calm		do	74	Do.
May 7, 7 a.m.	30.58				Calm		Clear	79	At Cape Baird, Grinnell Land.
7, 8 a.m.	30.57				Calm		do	79	Do.
7, 9 a.m.	30.55	7.6				Light	do	79	Do.
7, 10 a.m.	30.55	10.1				do	Cum. 1, str. 2	79	Do.
7, 11 a.m.	30.55	13.6				do	Clear	79	Do.
7, 12 noon	30.54	13.0			SW	Brisk	do	79	Do.
7, 1 p.m.	30.54	13.5			SW	do	do	79	Do.
7, 2 p.m.	30.55	9.8			SW	do	do	79	Do.
7, 3 p.m.	30.55	8.3			Calm		do	79	Do.
7, 4 p.m.	30.56	7.1			Calm		do	79	Do.
7, 5 p.m.	30.55	8.9			Calm		do	79	Do.
7, 6 p.m.	30.58	9.0			Calm		do	79	Do.
7, 7 p.m.	30.58	11.2			Calm		do	79	Do.
7, 8 p.m.	30.61	7.4			W	Light	do	79	Do.
7, 9 p.m.	30.60	5.0			W	do	do	79	Do.
7, 10 p.m.	30.60	4.5			W	Brisk	do	79	Do.
7, 11 p.m.	30.60	2.0			W	do	do	79	Do.
7, 12 mdt	30.60	0.0			W	do	do	79	Do.
8, 1 a.m.	30.61	5.2			W	do	do	79	Do.
8, 2 a.m.	30.62	6.0				Light	do	79	Do.
8, 3 a.m.	30.62	6.0				do	do	79	Do.
8, 4 a.m.	30.62	10.0				do	do	79	Do.
8, 5 a.m.	30.62	10.5				do	do	79	Do.
8, 6 a.m.	30.59	7.0			W	do	do	79	Do.
8, 7 a.m.	30.59	6.9			W	do	do	79	Do.
8, 8 a.m.	30.58	7.1			W	Brisk	do	79	Do.
8, 9 a.m.	30.57	4.9			W	Light	do	79	Do.
8, 10 a.m.	30.56	5.5			W	do	do	79	Do.
8, 11 a.m.	30.57	5.0			W	do	do	79	Do.
8, 12 noon	30.56	7.6			W	do	do	79	Do.
8, 1 p.m.	30.59	6.8			Calm		do	79	Do.
8, 2 p.m.	30.58	5.0			W	Brisk	do	79	Do.
8, 3 p.m.	30.59	5.8			W	Light	do	79	Do.
8, 4 p.m.	30.60	6.1			W	do	do	79	Do.
8, 5 p.m.	30.61	10.0				do	do	79	Do.
8, 6 p.m.	30.62	9.0				do	do	79	Do.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1883.	*Inches.*	°	°	°					
May 8, 7 p. m.	30.64	9.0				Light	Clear	79	At Camp Baird, Grinnell Land.
8, 8 p. m.	30.65	8.1				do	do	79	Do.
8, 9 p. m.	30.66	6.0			W	Brisk	do	79	Do.
8, 10 p. m.	30.66	8.0			W	do	do	79	Do.
8, 11 p. m.	30.65	5.9				Light	do	79	Do.
8, 12 mdt	30.65	6.8			W	Brisk	do	79	Do.
9, 1 a. m.	30.64	5.0			W	do	do	79	Do.
9, 2 a. m.	30.64	6.3			W	do	do	79	Do.
9, 3 a. m.	30.63	5.9			W	do	do	79	Do.
9, 4 a. m.	30.62	13.8			W	do	do	79	Do.
9, 5 a. m.	30.60	11.9			W	do	do	79	Do.
9, 6 a. m.	30.58	13.9			W	Light	do	79	Do.
9, 7 a. m.	30.58	12.0				Brisk	do	79	Do.
9, 8 a. m.	30.56	16.0				do	do	79	Do.
9, 9 a. m.	30.54	17.0				do	do	79	Do.
9, 10 a. m.	30.52	18.0				do	do	79	Do.
9, 11 a. m.	30.52	18.0				do	do	79	Do.
9, 12 noon	30.49	18.0				do	do	79	Do.
May 21 6 p. m.	29.61	28.0			NE	Fresh	Light snow	82	At Cape Beechey, Grinnell Land; latitude 81° 52.5′ N.
21, 7 p. m.	29.60	28.[illegible]			NE	Light	do	82	Do.
21, 8 p. m.	29.60	28.9			Calm		do	82	Do.
21, 9 p. m.	29.60	29.8			NE	Light	Cloudy	82	Do.
21, 10 p. m.	29.60	28.5			NE	do	do	82	Do.
21, 11.15 p. m.	29.61	22.0			NE	Gentle	do	82	Do.
21, 12 mdt	29.61	28.5			NE	Light	Light snow	82	Do.
22, 1 a. m.	29.62	28.2			NE	do	Cloudy	82	Do.
22, 2 a. m.	29.62	29.6			NE	do	do	82	Do.
22, 3 a. m.	29.62	29.2			NE	Fresh	do	82	Do.
22, 4 a. m.	29.61	32.0			NE	Light	do	82	Do.
22, 5 a. m.								82	Do.
22, 6 a. m.	29.60	33.0			NE	Gentle	Clearing	82	Do.
22, 7 a. m.	29.59	32.0			NE	Light	Fair	82	Do.
22, 8 a. m.	29.59	32.5			NE	do	Clear	82	Do.
22, 9 a. m.	29.58	36.0			Calm		do	82	Do.
22, 10 a. m.	29.57	37.0			Calm		do	82	Do.
22, 11 a. m.	29.57	33.0			Calm		do	82	Do.
22, 12 noon	29.53	35.0			Calm		do	82	Do.
22, 1 p. m.	29.50	29.0			Calm		do	82	Do.
22, 2 p. m.	29.50	34.0			Calm		do	82	Do.
22, 3 p. m.	29.50	27.5			NE	Light	do	82	Do.
22, 4 p. m.	29.50	26.5			NE	do	do	82	Do.
22, 5 p. m.								82	Do.
22, 6 p. m.	29.49	25.5			NE	Light	Fair	82	Do.
22, 7 p. m.	29.49	24.5			NE	do	Cloudy	82	Do.
22, 8 p. m.	29.49	24.0			NE	Fresh	do	82	Do.
22, 9 p. m.	29.48	21.0			NE	Light	Heavy fog	82	Do.
22, 10 p. m.	29.48	22.0			NE	do	do	82	Do.
22, 11 p. m.	29.48	20.0			NE	Fresh	do	82	Do.
22, 12 mdt								82	Do.
23, 1 a. m.		19.5			Calm		Fair	82	Do.
23, 2 a. m.	29.51	21.5			Calm		do	82	Do.
23, 3 a. m.	29.50	25.2			NE	Light	Light fog	82	Do.
23, 4 a. m.	29.48	30.5			Calm		Fair	82	Do.
23, 5 a. m.								82	Do.
23, 6 a. m.	29.51	29.9			NE	Light	Fair	82	Do.
23, 7 a. m.	29.51	35.0			Calm		do	82	Do.
23, 8 a. m.	29.52	33.0			Calm		do	82	Do.
23, 9 a. m.	29.52	36.0			E	Light	do	82	Do.
23, 10 a. m.	29.53	35.0			Calm		do	82	Do.
23, 11 a. m.								82	Do.
23, 12 noon	29.59	26.0			NE	Fresh	Fair	82	Do.
23, 1 p. m.	29.60	26.5			NE	do	Cloudy	82	Do.
23, 2 p. m.	29.60	28.0			NE	do	do	82	Do.
23, 3 p. m.	29.61	27.0			NE	do	do	82	Do.
23, 4 p. m.	29.61	27.0			NE	do	do	82	Do.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1883.	*Inches.*	°	°	°					
May 23, 5 p. m.	29.66	25.5			NE	Fresh	Cloudy	82	At Cape Beechey, Grinnell Land; latitude 81° 52.5′ N.
22, 6 p. m.	29.66	29.0			NE	Light	do	82	Do.
23, 7 p. m.	29.68	25.0			NE	do	do	82	Do.
23, 8 p. m.	29.69	23.0			NE	Fresh	do	82	Do.
23, 9 p. m.	29.69	21.5			NE	Light	do	82	Do.
23, 10 p. m.	29.69	22.0			NE	Fresh	Fair	82	Do.
23, 11 p. m.	19.70	23.0			NE	Light	Cloudy	82	Do.
Apr. 26, 1.40 a. m.		−14.0					Very fine	86	Fort Conger to Stony Cape.
26, 5.30 p. m.		1.0			Calm		Cloudy	86	Stony Cape to beyond Hillock Depot.
27, 3.05 a. m.	30.20	− 1.0			Calm		do	86	Do.
27, 6.30 a. m.		5.5					Signs of a coming storm.	86	Do.
27, 7.30 p. m.		− 5.5					Overcast with broken clouds.	86	From above Hillock Depot to opposite Depot Point.
28, 3.30 a. m.		− 5.0					Clear	86	Do.
28, 6 a. m.		− 5.0						86	Do.
28, 6 p. m.		− 1.0			Calm		Clear	86	From opposite Depot Point to head of Ella Bay.
29, 5 a. m.		2.0						86	Do.
29, 6 a. m.	30.425						Partly foggy and overcast.	86	Do.
29, 6 p. m.		− 3.0						86	Ella Bay to glacier up valley.
29, 7 p. m.	30.50							86	Do.
30, 2 a. m.		− 9.5						86	Do.
30, 3 a. m.	30.325						Clear	86	Do.
30, 6 p. m.	27.65	4.5						86	At glacier. Barometer showed an elevation of 2,550 feet.
May 1, 2.50 a. m.	26.15							86	Apparent summit.
1, 3.45 a. m.	25.25							86	Real summit.
1, 8.45 a. m.	29.85							86	
1, 12 noon	29.85	3.5						86	
1, 11.50 p. m.							Snow	86	
2, 12.30 a. m.	29.60	1.0						86	
2, 8.40 a. m.	29.58	11.0						86	
2, 12 noon	29.57	6.5						86	
2, 2 p. m.	29.64	1.0						86	
2, 8 p. m.		0.0						86	Glacier back to Ella Bay.
3, 3.30 a. m.	30.05	−11.0						86	Do.
3, 6 p. m.	30.17	− 4.0					Clear	86	Ella Bay to Beatrix Bay.
4, 1.25 a. m.		− 8.0						86	Do.
4, 2.25 a. m.	30.09							86	Do.
4, 4.40 a. m.		−13.0			Calm			86	Do.
4, 5 p. m.	30.22						Clear	86	At Beatrix Bay.
4, 6 p. m.		− 2.0						86	Do.
4, 6.45 p. m.	30.22							86	Do.
4, 12 mdt		−12.0						86	Do.
5, 3.30 a. m.	30.22	−11.5						86	To Mount Easy.
5, 6.40 a. m.	30.27	− 5.5						86	Do.
5, 11.35 a. m.	30.22	0.0						86	o.
5, 7 p. m.	30.22	− 2.0					Clear	86	Do.
5, 11 p. m.		− 2.5					do	86	Mount Easy.
6, 1 a. m.	29.41	− 2.5						86	Ascent of Mount Easy.
6, 3 a. m.	29.48	1.0						86	Do.
6, 4.15 a. m.	29.00							86	Do.
6, 6.05 a. m.	27.25							86	Summit of Mount Easy. Elevation, 2,900 feet, per barometer.
6, 8 a. m.	27.22							86	Descent.
6, 9.50 a. m.	29.55							86	Do.
6, 12 noon		12.0			N		Clear	86	Do.
6, 11.15 p. m.	29.60	6.0						86	Do.
7, 2.35 a. m.	30.10							86	Preliminary journey to Musk-ox Valley.
7, 4.30 a. m.	30.22							86	Do.
7, 11.30 a. m.	29.83	15.5						86	Do.
7, 3 p. m.	29.83	11.0						86	Do.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Continued.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit.			Wind.		Weather.	Appendix.	Remarks.
		Exp'd.	Max.	Min.	Direction.	Velocity.			
1883.	*Inches.*	°	°	°					
May 8, 5.35 a. m.	30.20							86	Mount Easy to Musk-ox Valley.
8, 7.25 a. m.	30.18							86	Do.
8, 9.30 a. m.	30.10	9.0						86	Do.
8, 11.45 a. m.	30.10	13.5			Calm		Fine; sun bright	86	Do.
9, 12.30 a. m.		4.5			W.			86	Up Musk-ox Valley.
9, 1 a. m.	30.08							86	Do.
9, 8.15 a. m.	29.62	5.0						86	Do.
9, 12 noon	29.60	12.5						86	Do.
9, 11.15 p. m.	29.38	7.0						86	From Gap to Glacier.
9, 12 mdt.		4.5			Calm		Clear	86	Do.
10, 1.50 a. m.	29.18							86	Do.
10, 2.50 a. m.	29.12							86	Do.
10, 3.35 a. m.	29.10							86	Do.
10, 8.10 a. m.	28.73	17.5						86	Do.
10, 12.30 p. m.	28.73	17.5			W.	Strong		86	Do.
11, 12.30 a. m.	28.71	15.5						86	Over Divide of Grinnell Land.
11, 4 a. m.	27.55							86	Do.
11, 7.15 a. m.	28.52							86	Do.
11, 8.10 a. m.	28.35							86	Do.
11, 11 a. m.	28.47	16.5					Weather fine	86	Do.
11, 12.30 p. m.	28.43	17.0						86	Do.
11, 3.15 p. m.	28.43	18.5						86	Do.
12, 2.15 a. m.	28.375	21.0			Calm		Cloudy	86	From Snow Bank to near Fiord.
12, 4 a. m.	29.37							86	Do.
12, 4.40 a. m.	29.56	24.5						86	Do.
12, 6 a. m.	30.04	17.5						86	Do.
12, 7.45 a. m.	30.10	26.0					Cloudy	86	From Snow Bank to near Fiord, on Lake.
12, 12.20 p. m.	30.18	17.5						86	From Snow Bank to near Fiord, in camp.
12, 4.40 p. m.	30.18	14.5						86	From Snow Bank to near Fiord.
13, 3.20 a. m.	30.02	18.5			NW.	Light	Light snow	86	From west end of Lake down Fiord to Farthest.
13, 6.30 a. m.	29.94	25.0					do	86	Do.
13, 12.45 m.		29.0						86	Do.
13, 2 p. m.	29.87							86	Do.
13, 6 p. m.	29.83							86	Do.
14, 8 a. m.	29.97	25.0			W.		Snowing	86	At Farthest.
14, 10 a. m.	29.94	30.0			W.	Light	do	86	Do.
14, 10.45 a. m.	30.00	32.0					Snowing	86	Do.
14, 12.30 p. m.	29.97	34.0					do	86	Do.
14, 1.45 p. m.	30.02	34.0					do	86	Do.
14, 3.25 p. m.	30.00	37.0					do	86	Do.
14, 4.20 p. m.	30.02	33.5					do	86	Do.
14, 6 p. m.	30.02	27.5			E.	Light		86	Do.
15, 5.15 a. m.		14.0						86	Do.
15, 5.45 a. m.	29.98				W.			86	Do.
15, 7.10 a. m.	29.93	17.0						86	Do.
15, 10.15 a. m.	27.44							86	Ascending cliffs. Elevat'n 2,250 ft., per bar.
15, 10.35 a. m.	27.42							86	Ascending cliffs.
15, 1.35 p. m.	29.73	20.0						86	At tent, Farthest.
15, 5.20 p. m.	29.82	25.5						86	Do.
15, 6 p. m.	29.77	20.0						86	Do.
15, 10.05 p. m.	29.75	19.0						86	Do.
16, 7.25 a. m.	29.84							86	Farthest to Lake.
16, 7.45 a. m.	29.85	11.5			W.	Strong	Clear	86	Do.
16, 1 p. m.	29.87							86	Do.
16, 9.45 p. m.	29.92	3.0			Calm		Clear	86	At end of Lake.
17, 7 a. m.	30.03	14.0			Calm			86	End of Lake to Snow Bank. East end of Lake, barometer 30.03.
17, 5.10 p. m.	28.25	17.0						86	End of Lake to Snow Bank.
17, 7.30 p. m.	28.30	10.5						86	Do.
18, 3 a. m.		7.5						86	Across Divide.
18, 4.40 a. m.	28.37	4.5			E.	Light	Clear	86	Across Divide. Bar. on height to S. 27.82.
18, 8.25 a. m.	28.25	14.0					do	86	On Lake, across Divide.
18, 10.05 a. m.	28.51	13.2						86	At Glacial Wall, across Divide.
18, 11.05 a. m.	28.05	15.0						86	Do.
18, 11.05 a. m.	27.95							86	At Glacial Wall, further on across Divide.

TABLE CLXXXVI.—*Meteorological observations made by field parties of the Lady Franklin Bay Expedition*—Concluded.

Date.	Barometer, to sea level.	Temperature of the air, Fahrenheit. Exp'd.	Max.	Min.	Wind. Direction.	Velocity.	Weather.	Appendix.	Remarks.
1883.	*Inches.*	°	°	°					
May 18, 11.40 a. m.	27.90							86	At Glacial Wall, across Divide.
18, 11.40 a. m.	27.75							86	At Glacial Wall, further on across Divide.
18, 11.40 a. m.	27.65							86	Do.
18, 12.10 p. m.	27.60	16.0						86	At Glacial Wall, greatest elevation across Divide.
18, 2.30 p. m.	28.62	18.5						86	17th March, across Divide, in camp.
19, 3.20 a. m.	28.58	16.0			W.	Light	Clear	86	Down Musk-ox Valley.
19, 12 noon	28.82	20.0						86	Do.
19, 2 p. m.	28.82	23.0			Calm		Clear	86	Do.
19, 10.30 p. m.	28.74	24.0			W.	Light		86	Do.
20, 5 a. m.	29.65	16.0						86	Do.
20, 7.20 a. m.	29.62	16.0						86	Do.
20, 9.20 a. m.	29.57	22.0						86	Do.
20, 3.30 p. m.	29.50	28.0						86	From Musk-ox Valley to head of Beatrix Bay Valley.
20, 4 p. m.	29.50	30.0			Calm		Clear	86	Do.
20, 5.15 p. m.	29.48	23.0						86	Do.
20, 9.15 p. m.	29.00	25.0			N	Light	Cloudy	86	Do.
21, 12.45 a. m.	28.95	28.0					Fine	86	Down valley to Beatrix Bay.
21, 7 a. m.	28.98	33.0			N	Strong		86	Do.
21, 11 a. m.	28.98	36.0			N	Light		86	Down valley to Beatrix Bay. Wind increasing.
21, 5 p. m.	29.70	37.5						86	Down valley to Beatrix Bay.
21, 6.45 p. m.	29.75	28.0			NE			86	Do.
22, 5 a. m.	29.79	32.0			Calm		Foggy	86	Down Fiord to Simmond Bay.
22, 5.45 a. m.	29.79	27.0					Clear	86	Down Fiord to Simmond Bay. Fog on horizon.
22, 8.30	29.73	31.0			Calm			86	Down Fiord to Simmond Bay.
22,	29.35							86	North end of Lake, down Fiord to Simmond Bay.
22, 5.30 p. m.	29.63	27.0						86	Down Fiord to Simmond Bay.
22, 7.35 p. m.	29.68	23.0			Calm		Clear	86	Do.
23, 3 a. m.		21.0						86	Simmond Bay, down Fiord.
23, 3.40 a. m.	29.63							86	Do.
23, 4.45 a. m.	29.63	28.0			Calm		Cloudy	86	Do.
24, 1 a. m.	29.79	25.5					do	86	Simmond Bay, down Fiord. Threat'g snow.
24, 10 a. m.	29.84	27.0						86	Simmond Bay, down Fiord.
24, 12 noon	29.84	28.0						86	Do.
24, 4 p. m.	29.89						Snowing	86	Simmond Bay, down Fiord. Snow-storm from east raging.
24, 9 p. m.		23.0						86	To Bellows.
24, 9.30 p. m.	29.93						Snowing	86	To Bellows. Snow-storm from the east.
24, 11 p. m.	29.89	22.0						86	To Bellows.
25, 7.15 a. m.	29.88	22.0						86	Do.
25, 11.15 a. m.		24.0						86	Do.
25, 11.45 a. m.	29.84							86	Do.
26, 1.30 a. m.	29.87	19.5					Snowing	86	From Bellows to Fort Conger.

APPENDIX NO. 138[a].—*List of dates on which meteors were observed by the Lady Franklin Bay Expedition.*

1881.—October 19; November 22; December 11 and 20.
1882.—January 23; March 24; November 1, 9, 14, and 25; December 1 and 9.
1883.—January 8 and 20; February 1.

AUTHORITIES ON ARCTIC METEOROLOGY.

LIST OF THE PRINCIPAL AUTHORITIES ON ARCTIC METEOROLOGY CONSULTED IN THE PREPARATION OF THIS REPORT, WITH AN APPENDIX CONTAINING TITLES OF SOME MISCELLANEOUS WORKS OF ESPECIAL VALUE.

[NOTE.—Unless noted otherwise, these works will be found in one or more of the following libraries: Library of Congress, Navy Department, State Department, Signal Office, my private library. In the case of works not known to be in the Library of Congress, the library is indicated as follows: Navy Department, N.; State Department, S.; Signal Office, Sig.; and my library, G.]

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(Discussion of currents and climate.)

——— An address delivered before the Saint Louis Mercantile Library Association January 6, 1872, upon the thermal gateways to the pole, the currents of the ocean, and the influence of the latter upon the climates of the world. Saint Louis, 1872. 8°. 40 p. 2 pl.

BERGHAUS, H. Physikalischer Atlas . . . . enthaltend Geologie, Hydrographie, Meteorologie, Erdmagnetismus, Pflanzenverbreitung, Tierverbreitung und Völkeskunde. Lieferungen 1–10. Gotha, 1886–1887. 10 pts. f°. 30 chs.

(Complete work will include 75 charts.)

British Association, Committee of. Report upon the depth of permanently frozen soil in the Arctic regions. [London, 1886.] 8°. 6 p. *Repr. from:* Rep. Brit. Assoc., 1886.

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FEILDEN, H. W. Address to the members of the Norfolk and Norwich Naturalists' Society, at their seventeenth annual meeting, held at the Norfolk and Norwich Museum March 30, 1886. Trans. Norfolk and Norwich Nat. Soc., iv, 1886. (G.)

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——— Handbuch der Klimatologie. Stuttgart, 1883. 8°. x, 764 p.
(Klimatologie der Polarregionen, p. 713–754.)

HICKSON, W. E. On the climate of the north pole, and on circumpolar exploration. Journ. Roy. Geog. Soc., London, xxxv, 1865, 129–142.

HOWELL, G. R. The open polar sea. Albany, 1884. 8°. 8 p. (G.)

International Polar Commission. Mittheilungen. Bulletin. Communications. 1–6. St. Petersburg, 1882–1884. 6 pts. l. 8°. 334 p.

KUHN, F. v. Ueber die Ursachen des eisfreien Meeres in den Nordpolar-Gegenden. Zeitschr. Met., Wien, vii, 1872, 167–169.

LESLIE, J., JAMESON, R., & MURRAY, H. The polar seas and regions. [20 ed.] London, Edinb., 1855. 16°. 605 p. map, il.
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(Nördliche Polarzone, p. 515–607, 639–676.)

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(Text in Russian and German.)

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United States, Hydrographic Office. Hydrographic notice. No. 6 [and] 6a [of 1879. Letters and reports from the Vega expedition.] No. 82 of 1881. [Extract from report of Commodore Wadleigh, U. S. S. *Alliance*, 1881, in search of *Jeannette*. No. 84 of 1881. [Extract from report of Lieut. Berry, U. S. S. *Rodgers*, 1881, in search of *Jeannette*. Washington, 1879, 1881.] 4 papers. sm. 8° 13 p. map; 14 p. map; 11 p. 2 ch.; 4 p. fold. table.

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——— *Navy Department.* Proceedings of a court of inquiry convened at the Navy Department, Washington, D. C., October 5, 1882, to investigate the circumstances of the loss in the Arctic seas of the exploring steamer *Jeannette*, etc. Washington, 1883. 8°, iii, 363 p. 11 chs. 4 pl.

WELLS, J. C. Observations on the temperature of the Arctic sea in the neighborhood of Spitzbergen. Proc. Roy. Soc., London, xxi, 1873, 91–97; Naturforscher, Berlin, vi, 1873, 153–154.

——— The gateway to the Polynia; a voyage to Spitzbergen, from the journal of ———. London, 1873. ix, 355 p. map, il.

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——— Observations météorologiques de l'expédition arctique suédoise 1872–'73, redgées par ———. Svenska vet. akad. handl., Stockholm, xii, 1875, no. 7. 120 p.

——— Bidrag till kännedom om vindför halländena i de Spetsbergens omgifande delarne af norra ishafvet. Öfversigt vet. akad., xxxii, 1875, 15–29; Zeitschr. Met., Wien, xi, 1876, 145–149; Petermann's Mittheil., Gotha, 1876, 295–297.

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(Includes islands and sea north of Russia.)

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——— Meteorology in Russia. Report Smithson. Inst., Washington, 1872, 267–298.

(Up to parallel of 70° north.)

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(Observations at Ust-Jansk and other points. Original not seen; cited by Wild.)

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(Observations at Nijne-Kolymsk, 1820–1823, and other points. Original not seen; cited by Wild.)

——— Narrative of an expedition to the Polar sea, in the years 1820, 1821, 1822, and 1823, commanded by ———. Edited by Maj. Edward Sabine. London, 1840. 8°. cxxxvii, 413 p. map.

(Climate in text. Valuable temperature observations.)

WÜLLERSTORF-URBAIR, B. VON. Die meteorologischen Beobachtungen und die Analyse des Schiffscurses während der Polarexpedition unter Weyprecht und Payer, 1872–1874. Wien, 1875. 4° 292 p. pl. *Repr. from:* Denkschr. Akad. Wiss., Wien, xxxv. (Extr.) Petermann's Mittheil., Gotha, 1875, 222–228.

——— Die meteorologischen Beobachtungen am Bord des Polarschiffes *Tegetthoff*, unter Carl Weyprecht, in den Jahren 1872–'74. Wien, 1882. 4°. 146 p. 3 ch. *Repr. from:* Denkschr. Akad. Wiss., Wien, xliii. (Extr.) Zeitschr. Met. Wien, xviii, 1883, 193–199.

APPENDIX.

[NOTE.—The following list includes some descriptive works and authorities on Arctic zoology, that have been of especial service. In addition to the citations below, many works included in the foregoing lists on meteorology contain natural history.]

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DIAMILLA-MÜLLER, D. E. Il polo artico. *In his:* Letture scientifiche. i. Milano, Parigi, 1873. 12°. p. 199–228, ch.

FORCE, P. Grinnell Land. Remarks on the English maps of Arctic discoveries, in 1850 and 1851. [Washington, 1852.] 8°. 23 p. (G.)

——— Supplement to "Grinnell Land." Washington, 1853. 8°. 52 p. map. (G.)

GILDER, W. H. Schwatka's search; sledging in the Arctic in quest of the Franklin records. New York, 1881. 8°.

HENDRIK, HANS. Memoirs of ———, the Arctic traveler, serving under Kane, Hayes, Hall, and Nares, 1853–1876. London, 1878. 12°.

LAMONT, J. Seasons with the sea-horses; or sporting adventures in the northern seas. London, 1861. 8°.

——— Yachting in the Arctic seas, or notes of five voyages of sport and discovery in the neighborhood of Spitzbergen and Nowaya Zemlya. London, 1876. l. 8°.

LANMAN, C. Farthest north; or the life and explorations of Lieut. J. B. Lockwood. New York, 1885. 12°.

MACGAHAN, J. A. Under the northern lights. London, 1876. 8°.

MARKHAM, A. H. Northward Ho! London, 1879. 12°.

MELVILLE, G. W. Report, in connection with the *Jeannette* expedition. Washington, 1882. 8°. pamph.

NEWCOMB, R. L. Our lost explorers. The narrative of the *Jeannette* Arctic expedition. Hartford, Conn., San Francisco, 1882. 8°.

NOURSE, J. E. American explorations in the ice zones. Boston [1884]. l. 8°.

OSBORN, SHERARD. Stray leaves from an Arctic journal, or eighteen months in the Polar regions, 1850–1851. London, New York, 1852. sm. 8°.

RINK, H. Dialectes de la langue Esquimaude. *In:* Compte-rendu Congrès international des Américanistes. Copenhague, 1883. 8°. p. 328–337.

ROSSE, I. C. The first landing on Wrangel Island, with some remarks on the northern inhabitants. New York, 1883. 8°. *From:* Bull. Amer. Geog. Soc., New York, 1883, no. 3, 163–214.

SARGENT, E. Arctic adventure by sea and land, from the earliest date to the last expeditions in search of Sir John Franklin. Boston, 1857. 8°.

SCHLEY, W. S., & SOLEY, J. R. The rescue of Greely. New York, 1885. sm. 8°.

SEEBOHM, H. Siberia in Europe; a visit to the valley of the Petchora, in northeast Russia; with descriptions of the natural history, migrations of birds, etc. London, 1880. 8°.

——— Siberia in Asia; a visit to the valley of the Yenesay in east Siberia. With description of the natural history, migration of birds, etc. London, 1882. 8°.

SHILLINGLAW, J. J. A narrative of Arctic discovery, from the earliest period to the present time. London, 1850. sm. 8°.

SMUCKER, S. M. Arctic explorations and discoveries during the Nineteenth Century. New York, 1857. 12°.

SNELLING, W. J. The polar regions of the western continent explored. Boston, 1831. 8°.

SONNTAG, A. Narrative of the Grinnell exploring expedition to the Arctic Ocean in search of Sir John Franklin, 1853–1855. [Philadelphia,] 1857. 8°.

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BAIRD, S. F. Catalogue of North American birds. Washington, 1858. 4°. Smithson. Misc. Coll., ii.

——— Catalogue of North American mammals. Washington, 1857. 4°.

——— Review of American birds. Part 1. Washington, 1864–1872. 8°. Smithson. Misc. Coll., xii.

BREHM, A. E. Thierleben. Allgemeine Kunde des Thierreichs. Zweite Abtheilung. Vögel. Band i–iii. Leipzig, 1878–1879. 3 v. 4°.

FEILDEN, H. W. (Various papers on Arctic mammalia and birds.) *In:* Zoologist, London, i–iii, 1877–1879; Proc. Zool. Soc., London, 1877; Ibis, London, 1877.

KUMLIEN, L. Contributions to the natural history of Arctic America, made in connection with the Howgate polar expedition, 1877–'78. Bulletin of the U. S. National Museum, no. 15. Washington, 1879. 8°. Smithson. Misc. Coll., xxiii.

RICHARDSON, J. Fauna boreali-americana, or the zoology of the northern parts of British America. London, 1829–'37. 4 v. 4°.

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CONTRIBUTIONS TO TERRESTRIAL MAGNETISM.

MAGNETIC REDUCTIONS BY THE U. S. COAST AND GEODETIC SURVEY.

APPENDIX No. 139.

COMPUTING DIVISION, COAST AND GEODETIC SURVEY OFFICE,
November 6, 1886.

Mr. F. M. THORN, *Superintendent Coast and Geodetic Survey:*

DEAR SIR: I have the honor to submit herewith a MS. copy of the record, computation, and discussion of the *magnetic observations* made by the International Polar Expedition in command of Lieut. A. W. Greely, 1881–'84.

The preparation of this paper involved very considerable labor and occupied all the time I could spare from my ordinary official duties during five months; in this work I was ably assisted by Mr. Alexander Ziwet, and other members of the Computing Division have occasionally lent some aid.

Yours respectfully,

C. A. SCHOTT,
Assistant, Coast and Geodetic Survey.

CONTENTS.

TERRESTRIAL MAGNETISM.

REPORT ON THE RECORD WITH COMPUTATION AND RESULTS OF THE MAGNETIC OBSERVATIONS MADE BY THE EXPEDITION TO LADY FRANKLIN BAY, 1881-1884.

By CHARLES A. SCHOTT, *Assistant, U. S. Coast and Geodetic Survey.*

Introduction.—The expedition sent to Lady Franklin Bay, Grinnell Land, in 1881, was one of two expeditions fitted out by the United States Government to co-operate with and perform part of the work proposed by the International Polar Commission at its second session, at Bern, Switzerland, in 1880, Dr. H. Wild, president. The special object of the commission was to advance our knowledge of terrestrial physics and geography in the polar regions by concerted and sustained action of a series of expeditions supported by their respective Governments. By invitation of its president and the recommendation and support of the Chief Signal Officer the proposal was accepted, inasmuch as Congress had already authorized in 1880 a scientific expedition to Lady Franklin Bay, and had reaffirmed the same in the spring of 1881 by voting the necessary appropriation for independent polar research. Thus the circumstances were very favorable at the time of Dr. Wild's invitation to take part in the international work, and it was resolved by the Chief Signal Officer, General W. B. Hazen, who, under the auspices of the War Department had been placed in charge of fitting out the expedition, to afford all possible aid to it by co-operation as far as practicable. Lady Franklin Bay, the locality proposed, was approved by him as the objective point, and was the most northern of the thirteen international stations taking part in the work. The other American station, Point Barrow, Alaska,* is distant from it 20° 38′, or 1238 nautical miles, as measured on a great circle, and located on the opposite side of the north magnetic pole. The station selected derives some further importance from the fact of its position in a latitude to the north of that of the magnetic pole.

While thus the history of the inception of the eastern expedition is different from that of the western, the assistance of the U. S. Coast and Geodetic Survey was solicited equally for them, and such aid was rendered in the field of terrestrial magnetism, in tidal work, and in gravitational research as could be given in the short time intervening between the resolution of acceptance and the starting of the expeditions. This co-operation on the part of the Survey with the Signal Corps with reference to the supply of suitable instruments and the training of observers, which latter were provided by the Signal Office, is more fully explained in the introduction to the magnetic work at Point Barrow, *vide* Part VI of the official report already cited, and needs, therefore, no repetition here. This report also contains a copy of the instructions issued to both parties. As in the case of the Point Barrow record, the magnetic work returned by the Lady Franklin Bay party was entrusted to me by the Superintendent of the Survey for computation and discussion.

The circumstance that the American expeditions were at their respective stations a year earlier than the time when all the international stations finally co-operated in their fullest measure was due to the unavoidable delay on the part of other expeditions and subsequent postponement of the concerted field-work by the commission, in order that more time might be given to the instrumental outfit and better organization of the various parties. The same difficulty was experienced here, and this early start precluded the procuring of *differential magnetic instruments* for our parties, as well as the acquisition of the needed experience in the manipulation of the instruments.

*A first account of the magnetic work at Uglaamie Station, Point Barrow, by the writer, is published in the "Report of the International Polar Expedition to Point Barrow, Alaska, Lieut. P. H. Ray, commanding," Washington, 1885, Part VI, pp. 443-672.

Unlike Point Barrow, the Lady Franklin Bay station unfortunately could not subsequently be reached by a relief party, two such efforts, one in 1882 and the other in 1883, failing entirely, while the last, in the early part of the summer of 1884, succeeded in rescuing the survivors, who had, in accordance with instructions governing the actual circumstances, retreated in the preceding autumn from Fort Conger, their quarters at Lady Franklin Bay, to Camp Clay, near Cape Sabine, Smith Sound.

Among those unfortunate men who laid down their lives in pursuit of knowledge, and while in the performance of their official duty, was Sergt. Edward Israel, of the U. S. Signal Corps, the astronomer and magnetist of the expedition. The records of his observations, brought home, were close transcripts made at Fort Conger, since the original note-books, in consequence of their weight and bulk, had to be left behind. However, all records on hand are authenticated as to correctness by the signature of Lieutenant Greely, the commanding officer.

Sergeant Israel received practical instruction in the use of instruments and in computations during part of May and June, 1881, making his last records at Washington, June 18. Soon afterwards he left to join his party at St. John's, Newfoundland. As already stated, a set of magnetic instruments for absolute measures only could be secured, the two magnetographs of the Coast and Geodetic Survey, applying photographic register, being unavailable and otherwise unsuitable for the purpose. A new magnetometer (No. 12) made by Fauth & Co., of Washington, and a Kew dip circle by Casella (No. 19) were all the magnetic instruments furnished. Both instruments were left behind at Fort Conger in 1883, but the two magnets of the magnetometer and two of the dipping needles, Nos. 2 and 4 (perforated), were brought back to Washington. The magnetometer with theodolite (or alt-azimuth instrument) is of the pattern described in Appendix No. 8 (and figured on plate 36), Coast and Geodetic Survey report for 1881. The dip circle was of the kind shown on plate 37 of the same report.

The following communication from Lieutenant Greely to the Superintendent of the Survey will be found to contain all needful information respecting the magnetic work done at Fort Conger:

SIGNAL OFFICE, WAR DEPARTMENT,
Washington, D. C., April 20, 1886.

To the Superintendent of the U. S. Coast and Geodetic Survey, Washington, D. C.:

SIR: In connection with the magnetic work of the Lady Franklin Bay Expedition, I have the honor to furnish the following information:

The expedition was furnished with a magnetometer (No. 12), made by Fauth & Co., of Washington, D. C., with which all observations for declination were made, as well as those for horizontal intensity.

The dip observations were made with a Kew dip circle, by Cassella (No. 19), belonging to the U. S. Coast and Geodetic Survey. * * * Its standards were perpendicular, and, as the dip at Fort Conger amounts to 85°, it was possible to read but one end (the upper) of the needle. Owing to the bad order of the instrument it was impossible to obtain satisfactory readings from a loaded needle. In consequence, readings were made from the only end of the needle which could be observed.

* * * * * * * * *

The magnetic observatory at Fort Conger was situated about 150 yards [137^m] northeast (true) of the main house. * * * The observatory was constructed about 7 by 12 feet [2.13 by 3.65^m] in the clear, and was entirely of wood, being fastened together by pegs. The only metal in the building consisted of a few copper nails, used in securing the leathern hinges of the door and in a few other places.

During the second year, July 1, 1882, to July 31, 1883, a small fire-place was constructed at the north end of the building, in connection with which a large piece of copper was used. The fuel was part of the time wood and part of the time Cape Breton bituminous coal. When coal was used the main supply was kept outside the building, and only such an amount as was used upon the fire was at any time within it. This precaution was observed as I was unaware whether the coal contained any substance which might interfere with the reading of the magnetometer.

The magnetic observatory was erected with its greatest length in the astronomical meridian. The entrance door was in the south end, and opened into a passage through which the mark could be read. The mark itself was a 2 by 4 inch scantling, the narrow or 2-inch edge to the north (true), sunk 2 feet into the ground, and secured with earth and stones, so as to render its position fixed and certain. It was distant about 300 yards [274^m] from and directly south of the magnetometer.

During eight months of the year it was sufficiently light for the observer to read the mark without artificial means. During the four remaining months a bull's-eye lantern was used, being placed on the top of the scantling. It is not probable that an error of over an inch occurred in the position of the light at any time.

The mark was read daily, except during certain prolonged periods of excessive cold, when it was read upon alternate days. On term days, however, the mark was read before and after the observation for that day.

The dip circle was mounted in the northwest corner of the building on a wooden pier made of scantling, which was sunk a couple of feet into the ground and strongly secured.

The magnetometer was mounted on its tripod a little south of the center of the building. It was impracticable, without great labor, to have constructed a stone or brick pier, as the freezing weather commenced even before the party landed at Fort

Conger. The tripod was sunk, however, into the frozen ground, and its legs were so braced that its solidity appeared satisfactory both to Sergeant Israel, my astronomer, and to myself. In order to avoid any displacement through the carelessness or inadvertence of the observer by touching the legs, a number of guards, to a height of 6 inches or more, were placed around and a short distance from each leg of the tripod, which effectually protected it from mishaps.

Hourly observations were made with the magnetometer during the term or selected days from September, 1881, to June 30, 1882. The observations were reduced by Sergeant Israel, the astronomer of the expedition, and a copy of them has been sent to your office.

It may here be noted that the magnetic observations were made on Göttingen mean time, which needs a correction of five hours and forty-eight minutes to reduce it to Washington mean time, which was used for other observations, and of four hours and fifty-nine minutes to local mean time.

From July 1, 1882, until July 31, 1883, the instructions as to declination observations were carefully and fully carried out. Observations for horizontal intensity were possible only on special occasions, owing to the lack of an extra instrument for that purpose and the necessity of using the magnetometer in regular use for declination work.

The dip observations were made with greater frequency and regularity than the character of the instrument justified, but I preferred that much useless work should be done in that direction rather than that any complaint should be possible as to omissions on my part.

Fully nine-tenths of the observations for declination and inclination were made by the aid of artificial light, derived from a small copper lamp made by the tinsmith of the expedition.

The torsion was removed from the silk thread which suspended the magnet whenever the mark was read, and at such other times as were necessary from breakage, &c. At no time was the torsion of the thread allowed to accumulate for a longer period than a single day.

The accuracy of the time used in connection with the magnetic work depended on astronomical observations made by Sergeant Israel, the greater part of which were made with a transit instrument kindly loaned by the U. S. Coast and Geodetic Survey. The observations for time were invariably registered by means of an electric circuit, on a chronograph sheet. On one or two occasions a small chronometer was taken to the magnetic observatory, but generally the observer depended on the accuracy of watches, the rate of which had been determined by the astronomer.

The retreat of the party by boat necessitated the abandoning of the original records, which were made in pencil in a book which was never taken from the observatory except for the purpose of making the copies which are now on file in your office. The necessity of reducing the bulk and weight of observations to a minimum obliged me to reduce the original readings, which showed the extreme oscillations from left to right, to a mean point on the scale.

It is proper to state that the accuracy of the copy rested not simply on the correctness of the copyist, but that in every case the copyist subsequently read his work over while I calculated and checked the means after him. In consequence, only such errors can exist as are inseparable from that method.

Occasional breaks will be found in the record for which no explanations are given; sometimes from tardiness the observer occasionally missed a reading at fifty-eight minutes, but most omissions may be ascribed to the fact that the needle was off the scale and the observer was unable to adjust it until the fifty-eighth minute had passed. The reading at the third minute is occasionally wanting, owing to the fact that the needle had passed off the scale.

To augment the value of the observations and give negative information regarding the missing observations, stringent orders were issued directing the observer to fill in the blank with a note stating the cause of the observation being missed. When the needle was off the scale at the third minute the observer was directed to continue the observations until he had obtained five successive readings on the scale at intervals of one minute.

A large number of supplementary readings were made whenever the prevalence of auroras or the rapid fluctuations of the needle caused me to believe that these extra readings would be valuable.

The temperature of the observatory during the first winter was frequently from 15 to 30 degrees below zero F. [$-26°$ to $-34°$ C.], and for most months was below the freezing-point F. [0.0° C.]. During the second winter the temperature was generally from zero to minus 15 degrees F. [$-17.8°$ to $-26°$ C.], except on term days, when, owing to the influence of the fire, it ranged from 10 to 30 degrees F. above zero [$-12°$ to $-1°$ C.].

It became necessary for me to abandon the magnetometer and dip circle, but I brought back two magnets used in the magnetometer, also two of the dip needles, marked 2 and 4, the first perforated with 3 the other with 1 hole near each pole for insertion of weights; one set having been carried by Sergeant Israel and the other by myself.

Very respectfully, your obedient servant,

A. W. GREELY,

First Lieutenant, Fifth Cavalry, A. S. O., and Assistant.

RECORD AND RESULTS OF THE ASTRONOMICAL OBSERVATIONS FOR THE DETERMINATION OF LOCAL TIME, LATITUDE, LONGITUDE, AND AZIMUTH OF A MARK.

The instruments provided for the determination of the time, the geographical position, and the azimuth of the mark, used in connection with the declinometer, were a portable transit known as the "Perry Transit," lent by the Coast and Geodetic Survey, two small theodolites, and a number of sextants and chronometers.

The Perry transit, which was used in connection with moon culminations, and for furnishing the times for the pendulum or gravimetric work, was known as Coast Survey No. 11; it was of 82 centimeters (32 inches) focal length and had an aperture of 64 millimeters (2½ inches); it had a large pivot inequality, as shown by the measures taken at Fort Conger. The value of one division of its spirit level was 1.6″. This instrument was abandoned at the station on the retreat of the party. One of the theodolites formed part of the magnetometer and was known as alt-azimuth No. 12, this being the number of the magnetic instrument. Its horizontal circle was 9 centimeters in diameter, was divided to half degrees, increasing number denoting increasing azimuth, and could be read to the nearest minute of arc by means of two opposite verniers. Its vertical circle was 7 centimeters in diameter and divided and read off to the nearest minute as the azimuth circle, the graduation extending from 0° to 360° in the direction of the motion of the hands of a watch. The other theodolite was known as the topographical theodolite No. 4950; its horizontal circle admits of tenths of minutes to be read off by its two verniers—it had no vertical circle. Sextants were used in measuring altitudes and lunar distances; the number of the instrument and record of index error are given with each set of observations. The principal chronometers were: Bond & Sons No. 198 (sidereal chronometer); Tobias & Leavitt No. 124 (mean time chronometer), and sidereal chronometers Frodsham No. 2490 (a break-circuit chronometer lent by the Coast and Geodetic Survey), and Hutton No. 310. There were also sidereal chronometers No. 1425 and No. 525 and mean-time chronometer No. 10046. A hack watch was occasionally used.

The chronometers at the station were kept in a place as nearly as possible of uniform temperature by the application of artificial heat. A series of comparisons of chronometers was kept up daily or at irregular intervals of a few days, as circumstances demanded, between July 15, 1881, and July 25, 1883. The chronometers compared were No. 124 with Nos. 2490, 310, 198, 1425, and 525 (the last discontinued August 15, 1881; 1425 was discontinued November 10, 1882). These comparisons were made about midnight* and the record is accompanied by all needful statements respecting occasional stoppages or other changes in the state of the chronometers. On July 15, 1881, the *Proteus* was at Godhavn, Greenland, and on August 15 at Discovery Harbor; between these dates the comparisons were made on board ship. On August 19, 1881, the regular observations on land were commenced. July 7, 1881, when leaving St. John's, Newfoundland, the six chronometers had been regulated to Greenwich time.

The reductions which follow each record of observations were made in accordance with Chauvenet's Manual of Spherical and Practical Astronomy (Philadelphia, 1863, two volumes), and his notation has been adopted. In order to make any further explanation unnecessary I have added in each case the reference to the method followed.

In the computation, the data of the American Ephemeris and Nautical Almanac have been adopted; only leading intermediate values are given, and all mere logarithmic work has been suppressed.

The transit instrument was carefully mounted in the astronomical observatory on a brick pier built with Portland cement. This observatory was about a hundred yards [91^m] due East (true) of the house and about a hundred and fifty yards [137^m] to the southwest of the magnetic observatory.

The geographical position of Fort Conger has been preliminarily adopted as in latitude 81° 44′ and in longitude 64° 45′, or 4^h 19^m west of Greenwich.

The records and computations made at Fort Conger by Sergeant Israel bear witness to his carefulness and conscientious performance of his duty.

* It does not appear that any of the chronometers had its face divided to 24 hours; the double 12-hour division is always productive of annoyance, and the discrimination called for extra labor on the part of the computer. There was also occasionally a difficulty experienced in deciding whether a date referred to civil or to astronomical reckoning.

GEOGRAPHICAL POSITION OF FORT CONGER.

Observations for time at Fort Conger, Grinnell Land.

[1. Observations for time, May 10, 1883, E. Israel, observer. Equal altitudes of the sun with sextant No. 7 and sid. chronometer No. 198, compared with m. t. chronometer No. 124.]

Cover.	Sun.	Chronometer time. A. M. h. m. s.	2 alt. $\odot$	Chronometer time. P. M. h. m. s.
D	$\overline{\odot}$	9 12 00.5	37° 05′	8 29 07.8
		13 02.0	10	28 05.0
		14 12.3	15	26 52.0
R	$\underline{\odot}$	9 16 12.3	36 20	8 24 52.5
		17 19.*	25	23 46.2
		18 24.1	30	22 38.9

Chronometer comparison:

	h.	m.	s.
No. 198	2	52	46
No. 124	11	10	44

Index correction:	On arc.	Off arc.
A. M.	−26′ 10″	37′ 10″
P. M.	−27 00	35 50

	A. M.	P. M.
Barometer,	30.37 in.	30.35 in
Thermometer,	+8.1° Fah.	+17.8° Fah.

	h.	m.	s.
Reduction:* $\odot$ A. M. Chronometer time	9	15	11.8
$\odot$ P. M. Chronometer time	8	25	53.7
Middle chronometer time (No. 198)	2	50	32.75
Difference of chronometers	8	17	58.35
Middle chronometer time T_0 by No. 124	23	08	31.1
$\Delta T_0 = a + b$		− 1	40.8
$\Delta' T_0$		−	1.0
Chronometer time of apparent noon	23	06	49.3
Equation of time		+ 3	45.9
Chronometer time of mean noon	23	10	35.2
Chronometer No. 124 slow of mean time		49	24.8

$\delta = +17° 39' 02''$

Chronometer No. 124 slow of mean time 49 24.8 or ΔT (No. 124) $= +49^m 24.8^s$ at noon.

At time of comparison, or $3^h 12^m.6$ sid. time, ΔT (No. 198) $= +19^m 51.7^s$

[2. Observations for time, August 6 (August 5, astronomical reckoning), 1883, E. Israel, observer. Double altitudes of the sun with sextant No. 1475 and sid. chronometer No. 198, with comparisons of sid. chronometers Nos. 2490, 310, and 198, and m. t. chronometer No. 124.]

Cover.	Sun.	Chronometer time. h. m. s.	2 alt. $\odot$
D	$\overline{\odot}$	3 04 04.8	34° 55′
		05 13.4	35 00
		06 27.5	05
		07 34.7	10
		08 47.1	15
R	$\underline{\odot}$	3 10 43.8	34 20
		11 53.6	25
		12 58.3	30
		14 09.7	35
		15 17.3	40

Chronometer comparisons:

	h.	m.	s.		h.	m.	s.
No. 198,	2	51	02.5.	No. 124,	11	15	07 at night.
No. 124,	5	21	08.0.	No. 2490,	6	51	44
At night:							
No. 198,	8	46	07	No. 124,	11	12	02
No. 124,	11	13	14	No. 130,	14	22	43

Index correction:	On arc.	Off arc.
	−27′ 20″	+36′ 00″
	−27 15	+35 55

Barometer, 29.57 in.
Thermometer, 34.9° Fah.

Reduction:†							
Observed 2 $\underline{\odot}$	35°	05′	00″	Observed 2 $\overline{\odot}$	34°	30′	00″
Index correction	+	4	20		+	4	20
Apparent altitude	17	34	40		17	17	10
Refraction—parallax	−	2	57		−	3	00
Semi-diameter	−	15	49		+	15	49
h	17	15	54		17	29	59
	h.	m.	s.		h.	m.	s.
Mean chronometer time	15	06	25.5		15	13	00.5
Difference of chronometers Nos. 198 and 124	2	30	03.0		2	30	01.9
Mean chronometer time (No. 124)	17	36	28.5		17	43	02.4

p	73°	14′	45″	73°	14′	50″
s	86	07	20	86	14	25
s — *h*	68	51	26	68	44	26
t	−85	11	52	−83	33	10

	h.	m.	s.	h.	m.	s.
	− 5	40	47.5	− 5	34	12.7
E	+	5	42.2	+	5	42.2
Mean time	− 5	35	05.3	− 5	28	30.5
Mean time	18	24	54.7	18	31	29.5
Chronometer time	17	36	28.5	17	43	02.4
ΔT	+	48	26.2	+	48	27.1

Mean, chronometer No. 124, slow at $18^h 28^m$, August 5, $48^m 26.6^s$.

From first comparison: sid. chronometer No. 198 slow at $3^h 08^m$, sid. time, $17^m 00.3^s$.

*Chauvenet, Vol. I, Art. 140 (B).

†Chauvenet, Vol. I, Art. 146.

Observations for time at Fort Conger, Grinnell Land—Continued.

[Computation of the local times needed for the reduction of the three determinations of latitude, viz: On June 30, 1883, on July 3, 1883, and on July 19, 1883.]

We have from observations on May 10, 1883, at epoch $3\frac{1}{4}^h$, for sid. chronometer, Bond & Sons, No. 198 . . . . $\Delta T = +19^m\ 51^s.7$

Also, from a statement by observer, as the result of 12 observations of equal altitude, on July 29, 1883, reduced to epoch midnight ($20\frac{1}{4}^h$) for sid. chronometer, Bond & Sons, No. 198 . . . . $\Delta T = +17\ 13.1$

And from observations of August 5, 1883, at epoch $3\frac{1}{4}^h$, for sid. chronometer, Bond & Sons, No. 198 . . . . $\Delta T = +17\ 00.3$

Hence daily rate between May 10 and July 29 . . . . $\delta T = -1^s.97$

And daily rate between July 29 and August 5 . . . . $\delta T = -2.04$

The fact that m. t. chronometer, Tobias & Leavitt, No. 124, was set back 2^m on June 19, 1883, before the comparisons on that day had been made, precludes the deduction of a rate for this chronometer between May 10 and August 6, but we have:

From statement by the observer for July 29, 1883 (12^h) . . . . $\Delta T = +48^m\ 37^s.7$

And from observations on August 5, 1883, at epoch $18\frac{1}{2}^h$ . . . . $\Delta T = +48\ 26.6$

Hence daily rate between July 29 and August 5 . . . . $\delta T = -1^s.53$

We have also the following additional comparisons (about midnight) and table of corrections and rates of mean-time chronometer No. 124, covering the period during which latitude observations were made:

Comparison of chronometers.

[Sid. No. 198 and m. t. No. 124. For No. 198 we have, on July 29, 1883, $20\frac{1}{2}^h$, $\Delta T_{198} = +17^m\ 13.1^s$, $\delta T_{198} = -1.97^s$ daily.]

JUNE 19, 1883.*

		h.	m.	s.
No. 124		10	45	43
No. 198		17	9	9.5
$\Delta T_{198} =$	+		17	13.1
40.125 $\delta T_{198} =$	+		1	19.0
$\theta =$		17	27	41.6
$V_0 =$		5	49	28.67
		11	38	12.93
Reduction to midnight	−		1	54.39
Correction for longitude	−			42.43
Mean time		11	35	36.1
No. 124		10	45	43
$\Delta T_{124} =$			49	53.1

JUNE 27, 1883.

		h.	m.	s.
No. 124		12	29	43
No. 198		19	24	56.5
$\Delta T_{198} =$	+		17	13.1
32.03 $\delta T_{198} =$	+		1	3.1
$\theta =$		19	43	12.7
$V_0 =$		6	21	1.13
		13	22	11.57
Reduction to midnight	−		2	11.42
Correction for longitude	−			42.43
Mean time		13	19	17.7
No. 124		12	29	43
$\Delta T_{124} =$			49	34.7

JULY 3, 1883.

		h.	m.	s.
No. 124		11	4	3
No. 198		18	22	43.5
$\Delta T_{198} =$	+		17	13.1
26.07 $\delta T_{198} =$	+			51.4
$\theta =$		18	40	48.0
$V_0 =$		6	44	40.47
		11	56	7.53
Reduction to midnight	−		1	57.32
Correction for longitude	−			42.43
Mean time		11	53	27.78
No. 124		11	4	3
$\Delta T_{124} =$			49	24.8

JULY 8, 1883.

		h.	m.	s.
No. 124		11	16	10
No. 198		18	54	35
$\Delta T_{198} =$	+		17	13.1
21.05 $\delta T_{198} =$	+			41.5
$\theta =$		19	12	29.6
$V_0 =$		7	4	23.26
		12	8	6.34
Reduction to midnight	−		1	59.28
Correction for longitude	−			42.43
Mean time		12	5	24.63
No. 124		11	16	10
$\Delta T_{124} =$			49	14.6

JULY 14, 1883.

		h.	m.	s.
No. 124		11	25	27
No. 198		19	27	35
$\Delta T_{198} =$	+		17	13.1
15.03 $\delta T_{198} =$	+			29.6
$\theta =$		19	45	17.7
$V_0 =$		7	28	2.60
		12	17	15.10
Reduction to midnight	−		2	.78
Correction for longitude	−			42.43
Mean time		12	14	31.9
No. 124		11	25	27
$\Delta T_{124} =$			49	4.9

JULY 18, 1883.

		h.	m.	s.
No. 124		10	55	45
No. 198		19	13	34.5
$\Delta T_{198} =$	+		17	13.1
11.04 $\delta T_{198} =$	+			21.75
$\theta =$		19	31	9.35
$V_0 =$		7	43	48.82
		11	47	20.53
Reduction to midnight	−		1	55.88
Correction for longitude	−			42.43
Mean time		11	44	42.22
No. 124		10	55	45
$\Delta T_{124} =$			48	57.2

JULY 25, 1883.

		h.	m.	s.
No. 124		11	1	4
No. 198		19	46	31.5
$\Delta T_{198} =$	+		17	13.1
4.02 $\delta T_{198} =$	+			7.9
$\theta =$		20	3	52.5
$V_0 =$		8	11	24.71
		11	52	27.79
Reduction to midnight	−		1	56.52
Correction for longitude	−			42.43
Mean time		11	49	48.84
No. 124		11	1	4
$\Delta T_{124} =$			48	44.8

*Chronometer No. 124 was set back 2^m before this comparison.

Correction and rate of m. t. chronometer No. 124 during June, July, and August, 1883.

Civil date.	ΔT. Epoch = midnight.		δT. Daily rate.
1883.	*m.*	*s.*	*s.*
June 19	+49	53.1	
June 27		34.7	—2.30
July 3		24.8	—1.65
July 8		14.6	—2.04
July 14		4.9	—1.62
July 18	48	57.2	—1.92
July 25		44.8	—1.77
July 29		37.7	—1.78
Aug. 6		27.0	—1.53

NOTE.—The station was abandoned August 8, 1883.

Observations for latitude of Fort Conger, Grinnell Land.

[1. Observations for latitude June 30, 1883, E. Israel, observer; W. S. Jewell, recorder. Double altitudes of the sun with sextant No. 1475 and m. t. chronometer No. 10046; also comparison with m. t. chronometer No. 124.]

Roof.	Sun.	Chronometer time.			2 alt. $\odot$.		
		h.	*m.*	*s.*	°	′	″
D	$\overline{\odot}$	10	24	58	30	42	10
			26	00.5		41	30
			27	22		39	20
	$\odot$		28	56.5	29	35	30
			30	30		34	40
			31	28		34	20
R			33	14		33	20
			34	2		33	0
			34	40		32	40
	$\overline{\odot}$		36	21.5	30	34	0
			37	57		33	10
			39	36		32	20

Chronometer comparison:

	h.	*m.*	*s.*
No. 10046	10	14	40
No. 124	10	14	49

Index correction:

	On arc. ′ ″	Off arc. ′ ″
Before:	—27 20	+35 40
	—27 20	+35 40
After:	—27 20	+35 40
	—27 10	+35 40

Barometer, 29.85 in
Thermometer, 32.6° Fah.

Reduction:*	Set 1 ° ′ ″	Set 2. ° ′ ″
2 alt. $\odot$	30 7 55	30 3 5
Index correction	+4 10	+ 4 12
Observed altitude	15 6 2.5	15 3 38.5
Refraction parallax	— 3 39.5	— 3 39.8
h	15 2 23.0	14 59 58.7

	° ′ ″
Mean ζ_0	74 58 49.2
Am_0	+ 7 51.3
Bn_0	+ .2
	+ 23 9 5.5
φ	81 44 13.8

	h. *m.* *s.*
ΔT of chronometer No. 124 at midnight	+ 0 49 29.7
Chronometer time of mean midnight	11 10 30.3
Difference of chronometers Nos. 10046 and 124	9.0
Chronometer time of mean m'd't by No. 10046	11 10 21.3
Equation of time	+ 3 26.1
Apparent midnight by No. 10046	11 13 47.4

Mean hour angle t_0 (from midnight) —$41^m 42^s$

* Chauvenet, Vol. I, Art. 171 (D).

Observations for latitude of Fort Conger, Grinnell Land—Continued.

[2. Observations for latitude, July 3, 1883, E. Israel, observer. Circummeridian altitudes of the sun, with sextant No. 1475 and m. t. watch (Jewell's) compared with m. t. chronometer No. 124.]

Roof.	Sun.	Time by watch.			2 alt. ☉.		
		h.	*m.*	*s.*	°	′	″
D	☉̅	11	0	57	62	57	0
			2	13		57	30
			3	0		57	50
	☉̲		3	43	61	54	50
			4	34		55	10
			5	20		55	30
			6	2		55	30
			7	5		55	40
			7	49		55	30
R	☉̅		9	25	62	58	50
			10	13		59	10
			11	7		59	10
			11	51		59	10
			12	42		59	10
			13	20		59	10
	☉̲		15	51	61	56	0
			16	35		55	50
			17	19		55	40

Comparison of time keepers:

	h.	*m.*	*s.*
Jewell's watch	10	50	2.5
M. t. chronometer No. 124	10	50	0

Index correction:

	On arc.		Off arc.	
	′	″	′	″
Before:	−27	40	35	20
	−27	40	35	20
After:	−27	20	36	10
	−27	30	36	0

Barometer 29.60 in.
Thermometer, 37.4° Fah.

Reduction:*

	°	′	″
Mean 2 alt. ☉	62	27	2.2
Index correction		+4	5.0
Observed altitude	31	15	33.6
Refraction-parallax		−1	29.4
h	31	14	4.2
ζ_0	58	45	55.8
Am_0		—	17.3
δ	+22	58	7.5
ϕ	81	43	46.0

	h.	*m.*	*s.*
ΔT of chronometer No. 124 at noon		+49	25.8
Mean noon by chronometer No. 124	23	10	34.2
Equation of time		+3	54.8
Apparent noon by No. 124	23	14	29.0
Difference of Nos. 124 and 1475			2.5
Apparent noon by No. 1475	23	14	31.5
Mean hour angle t_0	—	5^m	41^s

*Chauvenet, Vol. I, Art. 171 (D).

Observations for latitude of Fort Conger, Grinnell Land—Continued.

[3. Observations for latitude, July 19, 1883, E. Israel, observer. Circummeridian altitudes of the sun, with sextant No. 1475 and sid. chronometer No. 198. Compared with m. t. chronometer No. 124.]

Roof.	Sun.	Time by chronometer.			2 alt. $\overline{\odot}$.		
		h.	*m.*	*s.*	°	′	″
D	$\overline{\odot}$	7	25	35	58	42	50
			26	57		43	5
			28	20		43	30
	$\underline{\odot}$		29	51	57	40	50
			30	49		41	0
			31	39		41	0
			32	38		41	0
			33	20		41	5
			34	15		41	10
R	$\overline{\odot}$		36	39	58	44	50
			37	27		44	40
			38	24		44	30
			39	19		44	20
			40	7		44	20
	$\underline{\odot}$		41	6	57	41	20
			42	5		41	0
			42	56		41	0
	$\overline{\odot}$		43	45	58	43	50

Comparison of chronometers:

	h.	*m.*	*s.*
No. 198	7	15	27
No. 124	10	55	39

Index correction:

	On arc.	Off arc.
Before:	−27′ 20″	35′ 30″
	−27 20	35 30
After:	−27 20	35 50
	−27 20	35 50

Barometer, 29.80 in.
Thermometer, 39.1° Fah.

Reduction: *

	°	′	″
Mean 2 alt. $\odot$	58	12	31.1
Index correction		+ 4	10.0
Observed altitude	29	8	20.6
Refraction-parallax		− 1	38.0
h	29	6	42.6
ζ_0	60	53	17.4
Am_0		—	10.0
δ	20	50	53.9
ϕ	81	44	1.3

	h.	*m.*	*s.*
ΔT of chronometer No. 124 at noon	+	48	56.4
Mean noon by No. 124	23	11	3.6
Equation of time	+	6	1.3
Apparent noon by chronometer No. 124	23	17	4.9
Difference of chronometers Nos. 124 and 198	3	40	11.9
Apparent noon by No. 198	7	36	53
Mean hour angle t_0		1^m	36^s

* Chauvenet, Vol. I, Art. 171 (D).

Results for latitude of Fort Conger, Grinnell Land.

	°	′	″
From double altitudes of the sun near lower transit, June 30, 1883	81	44	13.8
From circummeridian altitudes of the sun, upper transit, July 3, 1883		43	46.0
From circummeridian altitudes of the sun, upper transit, July 19, 1883		44	1.3
Indiscriminate mean	81	44	00.4
Mean by upper and lower transits	81	44	03.7

Considering that the first value has less weight and that three rough measures with other sextants gave values below 81° 44′, the value

$$\phi = 81^\circ\ 44'\ 00.4'' \pm 5.4''$$

has been adopted.

Observations for time, and for azimuth of marks at Fort Conger, Grinnell Land.

[1. Observations for time, September 6, 1881. E. Israel, observer. Vertical angles of the sun with alt-azimuth No. 12. Mean time chronometer No. 10046 compared with mean time chronometer No. 124.]

These observations form part of those made for azimuth, and will be found recorded further on.

1. Reduction:*

	h. m. s.
Mean of times by chronometer No. 10046	8 15 02.6
Difference of chronometers Nos. 10046 and 124	1 59.4
Mean of times by No. 124	8 17 02.0

	° '		° ' "		h. m. s.
Mean reading of vertical circle, telescope D	349 18.87	$\delta=+$	6 10 17.7		
Mean reading of vertical circle, telescope R	190 02.25	$s=$	87 54 51		
		$t=$	59 49 52		
Half difference, or apparent ζ	79 38.3				
Apparent altitude h	10 21.7	Hour angle			3 59 19.5
Correction for refraction and parallax	— 5.8	E			— 1 56.8
Observed altitude h	10 15.9	Mean local time of observation			3 57 22.7
		Chronometer time No. 124			8 17 02.0
		Mean time chronometer No. 124, fast			4 19 39.3
		Also at 4^h chronometer No. 10046, fast			4 17 39.9

*Chauvenet, Vol. I, Art. 146.

[2. Observations for time, June 9, 1882. E. Israel, observer. Equal altitudes of the sun, sextant No. 1425, sidereal chronometer No. 198 and comparisons with mean time chronometer No. 124.]

Glass cover.	Sun.	Chronometer time. A. M. h. m. s.	2 alt. ☉ ° '	Chronometer time. P. M. h. m. s.
D	☉	3 18 27.0	44 40	3 57 06.9
		19 39.5	45	55 55.8
		20 55.0	50	54 48.2
		22 02.0	55	53 45.0
		23 03.0	45 00	52 42.0
		24 04.5	05	51 32.0
D	☉	3 26 03.5	44 10	3 49 21.0
		27 15.0	15	48 04.9
		28 26.0	20	46 59.3
		29 34.0	25	45 55.0
		30 50.0	30	44 44.2
		31 55.5	35	43 35.5

Barometer, A. M. 30.06 inch. at 60° F.
P. M. 30.12 inch. at 67° F.
Thermometer, A. M., +26.6° F.; P. M., +33.2° F.
Chronometer comparisons:

		h. m. s.	h. m. s.
A. M.	No. 198	3 07 23.5	3 46 55.0
	No. 124	4 38 21.0	5 17 46.0
P. M.	No. 198	3 24 16.5	4 03 54.0
	No. 124	4 53 12.0	5 32 43.0

Index correction:

	On arc. ' "	Off arc. ' "
A. M.	—24 30	+38 15
	—24 35	+38 10
P. M.	—25 10	+37 50
	—25 00	+37 50

2. Reduction:*

	h. m. s.		h. m. s.
☉ A. M. chronometer time	3 21 21.83	☉ A. M. chronom. time	3 29 00.67
Diff. of Nos. 198 and 124 (δt in $1^m = -.1644^s$)	+1 30 55.20	Diff. of Nos. 198 and 124	+1 30 53.95
A. M. time by No. 124	4 52 17.03	A. M. time by No. 124	4 59 54.62
P. M. chronometer time	3 54 18.32	P. M. chronometer time	3 46 26.65
Diff. of Nos. 198 and 124 (δt in $1^m = -.1641^s$)	+1 28 50.58	Diff. of Nos. 198 and 124	+1 28 51.86
P. M. time by No. 124	5 23 08.90	P. M. time by No. 124	5 15 18.51

	Set 1. h. m. s.	Set 2. h. m. s.
Middle chronometer time T_0	☉ 23 07 42.96	☉ 23 07 36.57
$\Delta T_0 = a + b$	— 35.23	— 34.36
Chronometer time of apparent noon	23 07 07.73	23 07 02.21
$+ E$	+ 1 02.57	+ 1 02.57
Chronometer time of mean noon	23 08 10.30	23 08 04.78
No. 124 slow of Fort Conger mean time	51 49.70	51 55.22
ΔT = correction to No. 124 on Conger mean time at noon, June 9	+ 51 52.5	

*Chauvenet, Vol. I, Art. 140 (B).

Observations for time, and for azimuth of marks at Fort Conger, Grinnell Land—Continued.

[3. Observations for time, June 28, 1882. E. Israel, observer. Equal altitudes of the sun, sextant No. 1475, sidereal chronometer No. 198, and comparisons with mean time chronometer No. 124.]

Glass cover.	Sun.	Chronometer time. A. M.	2 alt. ☉	Chronometer time. P. M.
		h. m. s.	° ′	h. m. s.
R	☉	4 59 30.9	45 45	4 53 50.2
		5 00 45.1	50	52 34.2
		01 50.5	55	51 25.6
		03 00.0	46 00	50 20.0
		04 10.8	05	49 03.5
		05 22.1	10	47 54.8

	A. M.	P. M.
Barometer, at 60° F.,	30.14 inch.	30.10 inch.
Thermometer, F.,	+45.2°	+49.4°.

Chronometer comparisons:

		h.	m.	s.
A. M.	No. 198	4	36	58.5
	No. 124	4	51	52.0
P. M.	No. 198	4	31	26
	No. 124	4	44	21

Index correction:		On arc. ′ ″	Off arc. ′ ″
	A. M.	—24 55	37 55
		—25 10	37 40
	P. M.	—25 00	37 35
		—25 00	37 45

3. Reduction:*

		h. m. s.
A. M. ☉ chronometer time		5 02 26.57
Diff. of chronom. (δt in $1^m = -.166^s$)	+	14 49.27
Chronometer time by No. 124		5 17 15.84
T_0 by No. 124		23 10 29.50
$\Delta T_0 = a + b$	+	19.76
Chronometer time of apparent noon		23 10 49.26
$+E$	—	2 58.55
Chronometer time of mean noon		23 07 50.71

{or ΔT = correction to No. 124 on Fort Conger mean time = $+52^m\ 09.3^s$.}

		h. m. s.
P. M. ☉ chronometer time		4 50 51.38
Diff. of chronom. (δt in $1^m = -.166^s$)	+	12 51.78
Chronometer time by No. 124		5 03 43.16

Daily rate of No. 124 between June 9 and June 28, 1882: Losing, or $+0.88^s$.
N. B.—June 29, 1882, chronometer No. 124 was advanced four minutes.

*Chauvenet, Vol. I, Art. 140 (b).

Observations for azimuth of mark, Fort Conger.

[1. Observations for azimuth, September 6, 1881. Horizontal and vertical measures of the sun with alt-azimuth No. 12 (of magnetometer), mean time chronometer No. 10046, and comparison with mean time chronometer No 124.]

Tel.	Sun.	Chronometer time.	Horizontal circle.			Vertical circle.		
		h. m. s.		a	b		a	b
			Mark = 37°	21′	21′			
D	☉	8 08 31.0	141	35	35	349°	15′	14′
		10 13.5	142	01	01		18	18
	☉	11 51.0	141	52	53		20	20
		13 21.5	142	14	14		23	23
R	☉	16 21.0	323	38	37	190	07	08
		18 17.0	324	05	06		02	04
	☉	20 00.0	323	58	59		00	02
		21 46.0	324	25	26	189	56	59
			Mark = 217	25	28			

Barometer, 29.98 in. at 25.5° Fah.
Thermometer, 18.9° Fah.

Comparison of chronometers:

	h.	m.	s.	h.	m.	s.
No. 10046	7	44	30.0	8	31	00.0
No. 124	7	46	29.5	8	32	59.3

1. Reduction:* By the preceding computation for time on this date we have $h = 10°\ 15.9'$, $p = 83°\ 49'\ 42''$ and $s = 87°\ 54'\ 51''$.

Hence A =	119° 07.8′
Mean reading of azimuth circle	142 58.7
Mark reads	37 23.7
Difference of readings of circle and mark	105 35.0
A + this difference	224 42.8
Azimuth of mark east of south	44 42.8

N. B. This mark and those noted as A and B were all in the same direction.

*Chauvenet, Vol. I, Art. 275.

Observation for azimuth of mark, Fort Conger—Continued.

[2. Observations for azimuth of mark "*A*," Fort Conger, June 9, 1882, E. Israel, observer. Azimuths of the sun with alt-azimuth instrument No. 12.* Sidereal chronometer No. 198 and comparison with mean time chronometer No. 124.]

Sun's limb.	Chronometer time. *h. m. s.*	Horizontal circle.	*a*	*b*
		Mark = 6°	11.1′	09.9′
⊙|	12 52 28.0	103	01.0	59.0
	53 46.0		19.9	20.0
	55 32.0		47.0	47.8
|⊙	56 34.5		27.5	27.1
	57 41.8		45.0	45.1
	58 32.3		59.2	58.9
	59 30.5	104	13.0	13.1
	1 00 31.6		29.4	29.6
	01 34.2		45.9	46.0
⊙|	02 44.8	105	40.5	39.8
	03 48.1		56.7	56.9
	04 50.5	106	11.8	12.1
	05 45.0		27.2	27.3
	06 40.3		41.5	41.5
	07 40.0		54.0	54.2
|⊙	08 50.5		37.2	37.1
	09 40.0		50.1	50.1
	10 36.1	107	05.0	05.0
		Mark = 6	13.0	14.0

Chronometer comparisons:

	h.	*m.*	*s.*	*h.*	*m.*	*s.*
No. 198	12	44	29.0	1	23	38.5
No. 124	2	13	51.0	2	52	54.0

2. Reduction:†	*h. m. s.*	*h. m. s.*	*h. m. s.*
Mean chronometer time, No. 198	0 55 45.8	1 02 08.3	1 08 12.0
Difference of Nos. 198 and 124	+ 1 29 20.2	+ 1 29 19.1	+ 1 29 18.1
Mean, by No. 124	2 25 06.0	2 31 27.4	2 37 30.1
ΔT	+ 51 52.6	+ 51 52.6	+ 51 52.6
Mean time of observation	3 16 58.6	3 23 20.0	3 29 22.7
— Equation of time	+ 1 01.0	+ 1 00.9	+ 1 00.9
Apparent time, or t	3 17 59.6	3 24 20.9	3 30 23.6
Hour angle, t	49° 29′ 54″	51° 05′ 13.5″	52° 35′ 54″
δ	+22 58 47	+22 58 49	+22 58 50
Azimuth of ⊙ 180°	−52 35.0	−54 13.6	−55 47.3
Circle readings	103 33.1	105 12.9	106 45.9
Mean reading of mark	6 10.5	6 12.0	6 13.5
Angle between circle and mark	97 22.6	99 00.9	100 32.4
Azimuth of mark, east of south	44 47.6	44 47.3	44 45.1
Mean		44 46.7	

* Supposed a mistake and to have been topographical theodolite No. 4950, which may be read to fractions of a minute.

† By the formula $\tan A = \dfrac{\sin t}{\cos \phi \tan \delta - \sin \phi \cos t}$

[3. Observations for azimuth of mark "*B*," Fort Conger, June 28, 1882. E. Israel, observer. Azimuth of the sun with theodolite No. 12.* Sidereal chronometer No. 198 and comparison with mean time chronometer No. 124.]

Sun's limb.	Chronometer time. *h. m. s.*	Horizontal circle.	*a*	*b*
		Mark = 6°	07.0′	07.5′
⊙|	3 06 15.0	116	45.5	45.0
	07 38.2	117	06.1	05.9
	09 21.5		32.5	31.8
|⊙	10 38.9		19.0	18.1
	11 51.8		35.2	34.9
	12 59.1		55.0	55.0
	14 42.6	118	20.1	19.7
	15 53.7		38.1	38.0
	16 55.5		55.0	54.2
⊙|	18 04.8	119	45.6	45.0
	19 06.8	120	01.3	00.8
	19 50.5		12.2	12.0
	20 47.1		27.9	27.3
	21 43.0		40.4	40.0
	22 36.6		55.0	54.8
|⊙	23 30.0		32.6	32.4
	24 26.1		47.0	46.6
	25 13.7		59.2	58.8
		Mark = 6	07.4	08.0

Chronometer comparison:

	h.	*m.*	*s.*
No. 198	2	51	41.5
No. 124	3	04	53.0

3. Reduction:†	*h. m. s.*	*h. m. s.*	*h. m. s.*
Mean chronometer time, No. 198	3 09 47.4	3 17 25.6	3 23 02.8
Difference of Nos. 198 and 124	+ 13 08.5	+ 13 07.3	+ 13 06.3
Mean time by No. 124	3 22 55.9	3 30 32.9	3 36 09.1
ΔT	+ 52 09.4	+ 52 09.4	+ 52 09.4
Mean time of observation	4 15 05.3	4 22 42.3	4 28 18.5
— Equation of time	— 3 00.7	— 3 00.7	— 3 00.8
Apparent time, or t	4 12 04.6	4 19 41.6	4 25 17.7
	° ′ ″	° ′ ″	° ′ ″
Hour angle	63 01 09	64 55 24	66 19 25.5
δ	+23 16 11	+23 16 10	+23 16 09
Azimuth of sun 180°	−66 31.2	−68 27.3	−69 52.7
Circle readings	117 22.0	119 18.5	120 43.5
Mean reading of mark	6 07.5	6 07.5	6 07.5
Angle between circle and mark	111 14.5	113 11.0	114 36.0
Azimuth of mark, east of south	44 43.3	44 43.7	44 43.3
Mean		44 43.4	

Recapitulation of results for azimuth of mark:

	°	′	
Observation of September 6, 1881,	44	42.8,	east of south.
Observation of June 9, 1882,	44	46.7,	east of south.
Observation of July 29, 1882,	44	43.4,	east of south.
Mean adopted,	44	44.3,	east of south.
		±0.8	

Or, $a = 315° 15.7' \pm 0.8$

* Supposed to be topographical theodolite No. 4950, which may be read to fractions of a minute.

† By $\tan A = \dfrac{\sin t}{\cos \phi \tan \delta - \sin \phi \cos t}$

OBSERVATIONS FOR TIME AND LONGITUDE AT FORT CONGER, GRINNELL LAND.

For the determination of the longitude of Fort Conger we have several methods, viz: (A) Chronometer transportation, (B) Moon culminations, (C) Occultations, and (D) Lunar distances.

(A). Longitude by Means of Chronometer Transportation.

The data for this determination are very meager, and at best can give only an approximation. It is proposed to find the sea rate of mean time chronometer No. 124 from the observations at St. John's, Newfoundland, and at Upernivik, Greenland, between July 6 and July 28, 1881, and to make use of the rate so found for the interval, July 28 to August 15, 1881, at which latter date the first local time observations were made at Fort Conger. The longitudes of St. John's and of Upern[illegible] are supposed known.

Observations for time and longitude.

[1. Observations for time, St. John's, Newfoundland, July 3 and July 6, 1881, E. Israel, observer. Sextant No. 1560, sidereal chronometer No. 1425. Chronometer comparisons were made on July 7, 1881.]

July 3, 1881. Time by chronometer.			2 alt. ✱ α Boötis.			July 6, 1881. Time by chronometer.			2 alt. ✱ α Boötis.		
h.	m.	s.	°	′	″	h.	m.	s.	°	′	″
19	20	29.5	111	01	40	20	09	18.0	97	50	50
	22	57.8	110	22	35		10	26.5		29	10
	25	59.5	109	45	40		11	42.2		10	00
	29	01.0	108	57	00		12	56.1	96	49	20
	32	34.8	108	02	10		13	58.6		26	50
	34	36.0	107	28	10		14	56.7		09	20

Index correction = —20″ Index correction = + 1′ 22.5″

Reduction:* According to Admiral Bayfield, R. N. (List of Geographical Positions, Hydrographic Office, Washington, 1883), the Chain Rock Battery is in $\phi = 47° 34' 2''$ and $\lambda = 52° 40' 27''$ or $3^h 30^m 43.1^s$ west of Greenwich. Dividing each set of observations in two parts we have:

	July 3.						July 6.					
	°	′	″	°	′	″	°	′	″	°	′	″
Observed 2 alt.	110	23	18.3	108	09	06.7	97	30	00	96	28	30
Index correction	—		20.0	—		20.0	+	1	22.5	+	1	22.5
Apparent altitude	55	11	29.2	54	04	23.4	48	45	41.2	48	14	56.2
Correction for refraction	—		40.1	—		41.8	—		50.7	—		51.5
h	55	10	49.1	54	03	41.6	48	44	50.5	48	14	04.7
δ	+19° 48′ 03″						+19° 48′ 03″					
	h.	m.	s.	h.	m.	s.	h.	m.	s.	h.	m.	s.
t	1	43	42.8	1	52	41.3	2	31	05.9	2	34	33.5
a	14	10	16.9	14	10	16.9	14	10	16.8	14	10	16.8
θ	15	53	59.7	16	02	58.2	16	41	22.7	16	44	50.3
Mean chronometer time	19	23	08.9	19	32	03.9	20	10	28.9	20	13	57.1
Chronometer fast of local sid. time	3	29	09.2	3	29	05.7	3	29	06.2	3	29	06.8

	July 3.			July 6.		
	h.	m.	s.	h.	m.	s.
Mean ΔT on local sid. time	—3	29	07.5	—3	29	06.5
$\Delta\lambda$ St. John's and Greenwich	+3	30	43.1	+3	30	43.1
ΔT on Greenwich sid. time, slow		1	35.6		1	36.6

Daily rate, $\delta T = +0.33^s$

*Chauvenet, Vol. I, Art. 146.

Observations for time and longitude—Continued.

[2. Observations for time, Upernivik, Greenland, July 28, 1881, E. Israel, observer. Sextant No. 1560, mean time chronometer No. 10046, compared with mean time chronometer No. 124. Equal altitudes of the sun.]

Cover.	Sun.	Chronometer time. A. M.			2 alt. $\overline{\odot}$.			Chronometer time. P. M.		
		h.	*m.*	*s.*	°	′	″	*h.*	*m.*	*s.*
D	$\overline{\odot}$	1	18	34.0	64	30	00	6	24	15.6
			20	17.1		40	00		22	46.3
			21	29.0		50	00		21	08.5
R	$\underline{\odot}$		27	38.6		20	00		15	43.5
			29	04.0		28	40		14	25.1
			30	37.1		40	00		12	29.9
	$\overline{\odot}$		44	21.2	67	00	00	5	58	46.1
			45	16.0		05	00		58	12.1
			46	32.7		10	00		57	17.1
D	$\underline{\odot}$		49	31.2	66	20	00		53	14.9
			50	34.6		25	00		52	34.0
			51	27.8		30	00		51	31.9

	A. M.	P. M.
Barometer,	29.85 in.	29.82 in.
at	63° Fah.	65° Fah.
Thermometer,	49.8° Fah.	60.2° Fah.
Index correction of sextant,	−1′ 58.7″	−2′ 58.7″

Chronometer comparison:

	h.	*m.*	*s.*	*h.*	*m.*	*s.*	*h.*	*m.*	*s.*
No. 10046,	0	43	30.0	4	27	00.0	7	44	00.0
No. 124,	0	44	35.1	4	28	06.2	7	45	07.2

Reduction:* According to Danish Hydrographic Office (List of Geographical Positions, Hydrographic Office, Washington, 1883), the flagstaff at Upernivik is in $\phi = 72° 47′ 48″$ and in $\lambda = 55° 53′ 42″$ or $3^h 43^m 34.8^s$ west of Greenwich. Before this the values $\phi = 72° 46′$ and $\lambda = 56° 03′$ or $3^h 44^m 12^s$ have been occasionally used. (Smithsonian Tables of the Distribution of Atmospheric Temperature, Washington, 1876; Proceedings of the Royal Society, No. 196, "On the Results of the Magnetical Observations made by the Officers of the Arctic Expedition, 1875–'76," 1879.) Sergeant Israel adopts $\phi = 72° 46′ 51″$ and $\lambda = 3^h 44^m 11.73^s$, which is very nearly Captain Inglefield's determination of 1854, and may be intended for it.

The values $\phi = 72° 46′ 51″$ and $\lambda = 3^h 44^m 11.73^s$ will be here adopted.

	°	′	″	°	′	″	°	′	″	°	′	″
Observed 2 alt. ☉	64	34	46.7	66	45	00.0	64	34	46.7	66	45	00.0
Index correction	−	1	58.7	−	1	58.7	−	2	58.7	−	2	58.7
Apparent altitude	32	16	24.0	33	21	30.6	32	15	54.0	33	21	00.6
Refraction − parallax	−	1	23.8	−	1	20.3	−	1	22.2	−	1	18.7
h	32	15	00.2	33	20	10.3	32	14	31.8	33	19	41.9
Apparent δ ☽	18	53	49.2	18	53	35.9	18	51	10.8	18	50	56.9
s	88	04	01.0	88	36	42.7	88	05	12.9	88	37	41.0
s − *h*	55	49	00.8	55	16	32.4	55	50	41.1	55	17	59.1
t	−36	47	58	−30	55	38	+36	36	12	+30	44	34
	h.	*m.*	*s.*	*h.*	*m.*	*s.*	*h.*	*m.*	*s.*	*h.*	*m.*	*s.*
t	− 2	27	11.9	− 2	03	42.5	+ 2	26	24.8	+ 2	02	58.3
Equation of time	+	6	14.2	+	6	14.2	+	6	14.0	+	6	14.0
Mean time	− 2	20	57.7	− 1	57	28.3	+ 2	32	38.8	+ 2	09	12.3
Time by No. 10046	1	24	36.6	1	47	57.2	6	18	28.2	5	55	16.0
Correction for 2d difference	−		3.4	−		1.5	+		3.2	+		1.7
ΔT for No. 10046	− 3	45	30.9	− 3	45	24.0	− 3	45	52.6	− 3	45	65.4
Mean ΔT (sets 1 and 2)				− 3	45	27.4	− 3	45	59.0			

	h.	*m.*	*s.*
ΔT of No. 10046 at noon	−3	45	43.2
Difference of chronometers Nos. 10046 and 124		1	06.0
ΔT of No. 124, at noon	−3	46	49.2
$\Delta\lambda$	3	44	11.7
ΔT of No. 124 on Greenwich mean time	−	2	37.5

Result of comparison† of chronometers off St. John's, Newfoundland, July 7, 1881: At $1^h 18^m$, Greenwich mean time, sidereal chronometer No. 1425 slow of Greenwich sidereal time $1^m 54.8^s$; mean time chronometer No. 124 fast of Greenwich mean time $1^m 24.6^s$. Taking our value of ΔT for No. 1425, July 7, viz, $+1^m 37^s$, ΔT of No. 124 for that date becomes $-1^m 42.4^s$. Hence, sea rate of No. 124, between July 7 and July 28, 1881, $= -2.62^s$.

*Chauvenet, Vol. I, Art. 151 (a).

†The actual chronometer times are not on record, but the difference of the two timekeepers must have been $6^h 59^m 15.0^s$.

Ob ervations for time and longitude—Continued.

[3. Observations for time and longitude near Fort Conger,* Grinnell Land, August 15, 1881, E. Israel, observer. Equal altitudes of the sun with sextant No. 1560 and mean time chronometer No. 10046.]

Cover.	Sun.	Chronometer time. A. M.	2 alt. $\underline{\odot}$	Chronometer time. P. M.
		h. m. s.	° ′	*h. m. s.*
D	$\underline{\odot}$	0 30 10.0	35 55	8 10 11
		31 31.5	36 00	08 46.5
		32 59.0	05	07 30
R	$\overline{\odot}$	35 06.0	37 15	05 23
		36 07.0	20‡	04 04
		37 33.0	25	02 54

	A. M.	P. M.
Barometer,	29.93 in.	29.94 in.
at	65.0° Fah.	67.0° Fah.
Thermometer,	38.6° Fah.	42.9° Fah.
Index correction of sextant	+6′ 05″	+6′ 10″

Chronometer comparisons:

	h. m. s.	*h. m. s.*	*h. m. s.*
No. 10046	0 08 00.0	1 33 00.0	11 14 00.0
No. 124	0 12 09.0	1 37 09.4	11 18 12.4

Reduction:†	A. M. ° ′ ″	P. M. ° ′ ″	
Observed 2 alt. ⊙	36 40 00.0	36 40 03.3	‡ { Set to 37° 20′ 20″
Index correction	+ 6 05.0	+ 6 10.0	
Apparen. altitude	18 23 02.5	18 23 06.6	
Refraction—parallax	— 2 48.2	— 2 46.7	
h	18 20 14.2	18 20 19.9	
p	76 03 47.5	76 09 42.6	
s	88 03 15.8	88 06 16.2	
$s-h$	69 43 01.6	69 45 56.3	
t	—56 58 41	+56 10 13	
	h. m. s.	*h. m. s.*	
t in time	— 3 47 54.7	+ 3 44 40.9	
Equation of time*	+ 4 13.6	+ 4 09.8	
Mean time	— 3 43 41.1	+ 3 48 50.7	
T_0'	0 33 54.4	8 06 28.1	
T_0	0 33 53.8	8 06 28.7	
ΔT for No. 10046	— 4 17 34.9	— 4 17 38.0	Mean = —4^h 17^m 36.4^s
Difference of Nos. 10046 and 124	4 09.2	4 11.4	
ΔT for No. 124	— 4 21 44.1	— 4 21 49.4	Mean = —4^h 21^m 46.7^s

To test this result I make use of the next time determination available for the purpose, viz, that of September 1, 1881:

* This observation is supposed to have been made south of Fort Conger in about latitude 81° 42′.5.
† Chauvenet, Vol. I, Art. 151 (2).

Observations for time and longitude—Continued.

[Observations for time, Fort Conger, September 1, 1881, E. Israel, observer. Altitudes of the sun with alt-azimuth No. 12. Time noted by mean time chronometer No. 10046; also comparisons with mean time chronometer No. 124.]

Tel.	Sun.	Chronometer time.			Vertical circle.		
		h.	*m.*	*s.*		*a.*	*b.*
D	⊙	9	20	32.5	350°	16′	16′
			21	43.0		20	19
			23	05.0		22	22
R	⊙		26	10.0	190	10	13
			27	53.5		06	09
			29	21.5		02	05

Barometer, 29.59 in. at 31° Fah.
Thermometer, +24.8° Fah.

Chronometer comparisons:

	h.	*m.*	*s.*	*h.*	*m.*	*s.*
No. 10046	9	06	00	9	36	00
No. 124	9	07	38.6	9	37	38.7

Reduction:*		°	′	″
⊙ alt.		9	54	09
Refraction—parallax	—		5	25
h		9	48	44
p		81	59	51.5
s		86	46	17.8
$s-h$		76	57	33.8
t		76	44	33
		h.	*m.*	*s.*
Hour angle		5	06	58.2
Equation of time	—			19.3
Mean time		5	06	38.9

		h.	*m.*	*s.*
Mean time of observation by chronometer		9	24	47.7
Correction for 2d difference	+			0.3
T_0		9	24	48.0
T_0'		5	06	38.9
$\varDelta T$ for No. 10046		−4	18	09.1
Difference of chronometers			1	38.6
$\varDelta T$ for No. 124		−4	19	47.7

Hence the daily rates of mean time chronometers Nos. 10046 and 124 between August 15 and September 6, 1881:

No. 10046.				No. 124.		
	h. m. s.	*s.*		*h. m. s.*	*s*	*s.*
Aug. 15, 1881, $\varDelta T=$	−4 17 36.4		$\varDelta T=$	−4 21 46.7		
Sept. 1	−4 18 09.1	$\delta T=-1.9$		−4 19 47.7	$\delta T=+7.0$	+5.8
Sept. 6	−4 17 39.9	$\delta T=+5.8$		−4 19 39.3	$\delta T=+1.7$	

These results seem to show that $\varDelta T$ of No. 124 for August 15, 1881, may be accepted.

We have:

		h.	*m.*	*s.*
July 28, 1881 (at Upernivik), mean time chronometer No. 124, $\varDelta T$ on Greenwich time	—		2	37.5
Effect of rate, July 28 to August 15, -18×2.62^s	—			47.2
August 15, 1881, No. 124, $\varDelta T$ on Greenwich time	—		3	24.7
August 15, 1881, No. 124, $\varDelta T$ on Fort Conger time		−4	21	46.7
Hence chronometric longitude of Fort Conger		−4	18	22.0

* Chauvenet, Vol. I, Art. 151 (2).

B. Longitude from Moon Culminations.

The transit instrument (U. S. Coast Survey, No. 11) was mounted in the astronomical observatory, located about 94 meters [103 yards] due east (true) of the main house at Fort Conger, and about 150 meters [164 yards] to the southwest of the magnetic observatory. The pier supporting it was built of brick, with Portland cement. The chronograph was placed in the main building and electrically connected with the transit; break-circuit sidereal chronometer, Frodsham No. 2490, was kept in the same place with the chronograph to insure as steady a temperature as could be obtained. The first set of transits dates from December 28, 1881, and terminates with January 29, 1882. It was used chiefly in connection with the pendulum work; the second set embraces the moon culminations observed between February 4, 1882, and February 18, 1883. The reduction of these transits was intrusted to Mr. Henry Farquhar, of the Computing Division of the Coast Survey. All observations were made by Sergeant E. Israel.

The magnifying power of the instrument is about 24 or 30; one division of the level $=1''.6$ and the pivot inequality p, from observations made at Fort Conger, October 1, 1881, by Sergeant Israel, $=+0^s.047$ for lamp east. In the first set we

have occasionally broken transits, but in the second set, after November 29, 1882, they were more frequent, and it appears that the threads had to be renewed a number of times. Mr. Farquhar found the following values for the equatorial intervals, answering for illumination west, and referred to the mean of the threads:

	I.	II.	III.	IV.	V.
	s.	*s.*	*s.*	*s.*	*s.*
1881. December 28 to February 4, 1882, inclusive, from 89 transits	44.44	21.96	− 0.19	+21.89	+44.70
1882. November 22, from 4 transits	32.36	−10.05	+ 3.80	+16.51	+22.10
1882. November 24 and 29, from 18 transits	−32.72	− 9.87	+ 4.79	+17.13	+20.67
1882. December 21 and 23, from 16 transits	−19.96	− 7.14	+ 6.16	+20.93	
1882. December 26 to January 25, 1883, inclusive, from 37 transits	−22.06	− 6.50	+ 7.06	+21.50	
1883. February 11 to February 18, inclusive, from 22 transits	−27.69	14.88	+ 0.33	+15.43	+26.80

The collimation, azimuthal deviation, and chronometer correction for each night's set, were worked out by the method of least squares; the hourly rate of the chronometer was found quite uniform, viz., 0^s.1 losing, for which allowance was made in the reduction. The observer apparently did not avail himself of a fixed azimuth mark which, in particular for the use of the transits in connection with the pendulum work, would have been advantageous this being a case where the rate of the chronometer had to be determined with the greatest care. At Fort Conger the angle between the pole and zenith is but 8¼ degrees.

The following is an abstract of the transit reductions during the period when moon-culminations were observed.

Star.	Ill'n.	Chronometer time, mean of threads.	Correction for— Rate.	Incl'n.	Coll'n.	Deviation.	Observed time of transit.	Tabular R. A.	Chronometer correction (ΔT.)
February 4, 1882.		*h. m. s.*	*s.*	*s.*	*s.*	*s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*
σ^2 Ursæ Majoris	W.	7 14 53.38	− .16	− 1.00	− 9.95	−317.57	7 09 24.70	9 00 05.02	1 50 40.32
α Cephei	W s. p.	19 35 20.97	− .12	+ 0.58	+ 8.10	−625.71	19 25 03.82	21 15 43.97	40.15
ϵ Leonis	W.	7 56 15.35	− .09	0.19	− 4.16	−458.49	7 48 32.42	9 39 11.92	39.50
α Leonis	W.	8 19 27.15	− .05	− 0.11	− 3.88	−475.36	8 11 27.75	10 02 07.85	40.10
γ' Leonis	W.	8 30 39.33	− .03	0.11	− 4.04	−463.45	8 22 51.70	10 13 30.63	38.93
☾ II	W.	8 50 05.60	*[−60.96]	− 0.01	− 3.92	−501.51	8 40 39.20		
δ Leonis	E.	9 24 54.11	+ .06	− 0.34	+ 4.06	−464.44	9 17 13.45	11 07 52.40	39.95
λ Draconis	E.	9 38 33.02	+ .08	− 2.43	+ 11.07	−295.24	9 33 46.50	11 24 27.13	40.63
λ Andromedæ	E. S. P.	21 50 37.20	+ .10	+ 0.70	− 5.44	−564.68	21 41 07.88	23 31 47.61	39.73
χ Ursæ Majoris	E.	9 55 57.56	+ .11	− 0.95	+ 5.71	−410.36	9 49 12.07	11 39 51.56	39.49
									1 50 39.37 at 10^h.5
November 22, 1882.									
α Andromedæ	E.	21 59 24.52	− .20	− 0.63	+ 13.56	+ 24.53	22 00 01.78	0 02 21.83	2 02 (20.05)?
6 Ursæ Minoris	E. s. p.	10 14 40.34	− .18	+50.08	−413.97	+160.75	10 11 17.02	12 13 42.12	(25.10)
α Cassiopeæ	W.	22 31 43.01	− .15	− 1.10	− 21.27	+ 20.90	22 31 41.39	0 33 54.84	13.45
21 Cassiopeæ	W.	22 36 22.19	− .14	− 2.64	− 44.21	+ 12.83	22 35 48.03	0 38 01.50	13.47
α Ursæ Minoris	W.	23 26 11.62	− .06	−32.14	−519.85	−141.84	23 14 37.73	1 16 54.20	(16.47)
α Ursæ Minoris	E.	23 08 58.54	− .09	−24.61	+519.85	−141.84	23 14 51.85	1 16 54.20	(02.35)
η Ursæ Majoris	E. s. p.	11 40 40.90	− .03	+ 0.85	− 18.53	+ 31.23	11 40 40.90	13 42 54.05	13.15
α Arietis	E.	23 57 45.62	− .01	− 0.45	+ 12.94	+ 24.99	23 58 23.09	2 00 36.59	13.50
☾ I	E.	0 01 13.44	[+70.41]	− 0.33	+ 12.82	+ 26.71	0 03 03.05		
ξ' Ceti	E.	0 03 58.21	.00	− 0.23	+ 12.05	+ 26.07	0 04 36.10	2 06 49.62	13.52
									2 02 13.51 at 2^h.1
November 24, 1882.									
5 Ursæ Minoris	E. s. p.	12 25 29.92	− .17	+ 4.29	− 52.71	+ 41.61	12 25 22.94	14 27 40.80	2 02 17.86
ϵ Boötis	E. s. p.	12 37 18.50	− .15	+ 0.41	− 14.17	+ 28.12	12 37 32.71	14 39 51.53	18.82
α Ceti	E.	0 53 14.41	− .12	− 0.23	+ 12.59	+ 25.90	0 53 52.55	2 56 11.54	18.99
48 Cephei	E.	1 02 19.80	− .11	− 5.03	+ 57.14	+ 9.27	1 03 21.07	3 05 39.09	18.02
α Coronæ Borealis	W. s. p.	13 26 41.71	− .07	+ 0.39	+ 14.10	+ 28.06	13 27 24.19	15 29 42.81	18.62
δ Persei	W.	1 32 17.92	− .06	− 1.25	− 18.55	+ 21.99	1 32 20.05	3 34 38.70	18.65
A Tauri	W.	1 55 19.58	− .02	− 0.52	− 13.53	+ 24.63	1 55 30.14	3 57 48.79	18.65
☾ II	W.	2 07 44.42	[−71.63]	− 0.53	− 13.93	+ 25.85	2 06 44.18		
γ Tauri	W.	2 10 39.89	.00	− 0.44	− 13.02	+ 25.08	2 10 51.51	4 13 10.07	18.56
ϵ Tauri	W.	2 19 19.39	+ .02	− 0.53	− 13.28	+ 24.82	2 19 30.42	4 21 49.10	18.68
									2 02 18.63 at 4^h.2

*[The quantity in brackets gives the reduction to the moon's center, or the sidereal time of semidiameter passing meridian; the Washington and Greenwich Ephemerides giving very nearly identical values.]

Star.	Ill'n.	Chronometer time, mean of threads.	Correction for— Rate.	Incl'n.	Coll'n.	Deviation.	Observed time of transit.	Tabular R. A.	Chronometer correction (ΔT.)
November 29, 1882.		h. m. s.	s.	s.	s.	s.	h. m. s.	h. m. s.	h. m. s.
25 Camelopardalis	E.	5 02 30.27	− .19	− .78	+ 93.65	− 3.11	5 03 59.84	7 06 33.22	2 02 33.28
δ Geminorum	E.	5 10 00.10	− .17	− .09	+ 12.97	+ 23.74	5 10 36.55	7 13 09.75	33.20
α Canis Minoris	E.	5 30 01.94	− .14	− .06	+ 12.07	+ 24.89	5 30 38.70	7 33 12.08	33.38
β Geminorum	E.	5 35 00.92	− .13	− .17	+ 13.64	+ 23.28	5 35 37.54	7 38 10.92	33.38
3 Ursæ Majoris	W.	5 58 57.72	− .09	− .63	− 33.23	+ 15.35	5 58 39.12	8 01 12.24	33.12
γ Cygni	W. s. p.	18 14 44.82	− .07	+ .19	+ 15.65	+ 27.53	18 15 28.12	20 18 01.34	33.22
σ^2 Cancri	W.	6 44 26.04	− .02	− .24	− 14.02	+ 22.39	6 44 34.15	8 47 07.43	33.28
ι Ursæ Majoris	W.	6 48 37.64	− .01	− .45	− 18.12	+ 20.51	6 48 39.57	8 51 12.86	33.29
☾ II	W.	6 53 51.68	[−63.94]	− .14	− 12.69	+ 24.60	6 52 59.51		
θ Hydræ	W.	7 05 31.91	+ .02	− .06	− 12.02	+ 24.35	7 05 44.20	9 08 17.61	33.41
ι Draconis	W.	7 19 14.05	+ .04	− 1.94	− 84.63	− 0.30	7 17 47.22	9 20 20.66	33.44
									2 02 33.33 at $8^h.9$
December 21, 1882.									
α Arietis	W.	23 56 47.51	− .17	− .09	− 1.50	+ 19.42	23 57 05.17	2 00 36.44	2 03 31.27
ξ^1 Ceti	W.	0 02 59.90	− .16	− .07	− 1.39	+ 20.25	0 03 18.53	2 06 49.50	30.97
γ Trianguli	W.	0 06 35.79	− .15	− .25	− 1.65	+ 18.73	0 06 52.47	2 10 23.61	31.14
ι Cassiopeæ	W.	0 15 49.87	− .13	− .95	− 3.51	+ 13.65	0 15 58.93	2 19 30.40	31.47
β Boötis	W. s. p.	12 53 34.92	− .07	+ .28	+ 1.82	+ 23.28	12 54 00.23	14 57 31.35	31.12
ζ Arietis	W.	1 04 23.79	− .05	− .22	− 1.47	+ 19.56	1 04 41.61	3 08 12.62	31.01
γ^2 Ursæ Minoris	W. s. p.	13 16 43.53	− .03	+ 1.32	+ 4.53	+ 30.05	13 17 19.40	15 20 51.13	31.73
☾ I	E.	1 36 35.41	[+70.66]	− .10	+ 1.52	+ 20.50	1 38 07.99		
ζ Persei	E.	1 42 57.76	+ .01	− .15	+ 1.62	+ 18.83	1 43 18.07	3 46 49.10	31.03
A^1 Tauri	E.	1 53 57.09	+ .03	− .11	+ 1.49	+ 19.50	1 54 18.00	3 57 48.94	30.94
									2 03 31.06 at $3^h.7$
December 23, 1882.									
τ Tauri	E.	2 31 20.00	− .11	− .18	+ 1.41	+ 21.55	2 31 42.67	4 35 15.67	2 03 33.00
α Camelopardalis	E.	2 38 40.44	− .10	− 1.10	+ 3.21	+ 15.40	2 38 57.85	4 42 30.40	32.55
ζ Aurigæ	E.	2 50 26.79	− .08	− .42	+ 1.72	+ 20.07	2 50 48.08	4 54 20.89	32.81
11 Orionis	E.	2 53 59.12	− .07	− .16	+ 1.35	+ 22.04	2 54 22.28	4 57 55.22	32.94
Groom., 944	E.	3 21 24.91	− .03	− 4.06	+ 15.32	− 16.22	3 21 19.92	5 24 59.16	(39.24)
Groom., 944	W.	3 21 58.85	− .03	− 3.41	− 15.32	− 16.22	3 21 23.87	5 24 59.16	(35.29)
☾ I	W.	3 38 30.03	[+70.10]	− .15	− 1.44	+ 22.62	3 40 01.16		
π Orionis	W.	3 44 58.24	+ .01	− .07	− 1.31	+ 22.55	5 48 52.39	5 48 52.39	32.97
β Aurigæ	W.	3 47 09.70	+ .01	− .29	− 1.84	+ 19.60	5 50 59.80	5 50 59.80	32.62
									2 03 32.88 at $5^h.7$
December 26, 1882.									
3 Ursæ Majoris	W.	5 57 22.65	− .05	− .91	− 2.38	+ 12.57	5 57 31.88	8 01 13.81	2 03 41.93
ζ^1 Cancri	W.	6 01 31.52	− .05	− .20	− .90	+ 19.14	6 01 49.51	8 05 32.14	42.63
β Cancri	W.	6 06 11.01	− .04	− .17	− .87	+ 19.61	6 06 29.54	8 10 12.18	42.64
γ Cygni	W. s. p.	18 13 54.88	− .03	+ .32	+ 1.12	+ 22.53	18 14 18.82	20 18 01.01	42.19
☾ II	W.	6 29 30.59	[−65.06]	− .16	− .92	+ 20.08	6 28 44.53		
									2 03 42.63 at $8^h.5$
December 27, 1882.									
ω^1 Cancri	W.	5 49 51.92	− .15	− .28	− .95	+ 23.55	5 50 14.09	7 53 53.31	2 03 39.22
3 Ursæ Majoris	W.	5 57 21.50	− .14	− .42	− 2.38	+ 15.85	5 57 34.41	8 01 13.86	39.45
β Cancri	W.	6 06 09.02	− .12	− .06	− .87	+ 24.73	6 06 32.70	8 10 12.20	39.50
γ Cygni	W. s. p.	18 13 52.40	− .11	+ .12	+ 1.12	+ 28.42	18 14 21.95	20 18 01.00	39.05
G 12-Yr. Cat., 1879	W. s. p.	18 48 14.87	− .05	+ .84	+ 5.01	+ 46.44	18 49 07.11	20 52 46.41	(39.30)
G 12-Yr. Cat., 1879	E. s. p.	18 48 24.51	− .05	− .08	− 5.01	+ 46.44	18 49 05.81	20 52 46.41	(40.60)
κ Cancri	E.	6 57 21.50	− .04	.00	+ .88	+ 24.63	6 57 46.97	9 01 26.44	39.47
θ Hydræ	E.	7 04 12.69	− .03	.00	+ .86	+ 25.14	7 04 38.66	9 08 18.42	39.76
α Lyncis	E.	7 09 54.11	− .02	− .03	+ 1.05	+ 22.76	7 10 17.87	9 13 57.42	39.55
☾ II	E.	7 19 56.67	[−63.40]	− .01	+ .90	+ 25.55	7 19 19.71		
ο Leonis	E.	7 30 50.95	+ .02	− .01	+ .87	+ 24.65	7 31 16.48	9 34 56.03	39.55
									2 03 39.51 at $9^h.4$
January 14, 1883.									
ο Cephei	E.	21 09 07.70	− .12	− 1.33	+ 2.04	+ 16.44	21 09 24.73	23 13 49.40	2 04 24.67
λ Draconis	E. s. p.	9 19 29.36	− .11	+ 1.59	− 2.28	+ 35.43	9 20 03.99	11 24 28.83	24.84
ι Piscium	E.	21 29 06.42	− .09	− .13	+ .78	+ 25.01	21 29 31.99	23 33 56.29	24.30
ω Piscium	E.	21 48 28.76	− .06	− .13	+ .78	+ 24.91	21 48 54.26	23 53 18.66	24.40
☾ I	E.	22 23 26.42	[+67.81]	− .12	+ .82	+ 25.86	22 25 00.79		
δ Piscium	E.	22 37 47.56	+ .02	− .14	+ .79	+ 24.88	22 38 13.11	0 42 37.50	24.39
32 Camelopardalis	W. s. p.	10 42 38.89	+ .03	+ 3.46	+ 7.52	+ 60.65	10 43 50.55	12 48 15.11	24.56
43 Cephei	W.	22 49 14.16	+ .04	− 4.84	−10.23	−22.84	22 48 36.29	0 53 02.74	26.45
τ Piscium	W.	23 00 28.07	+ .06	+ .26	− 0.90	+23.24	23 00 50.21	1 05 14.25	24.04
									2 04 24.36 at $0^h.5$

Star.	Ill'n.	Chronometer time, mean of threads.	Correction for— Rate.	Incl'n.	Coll'n.	Deviation.	Observed time of transit.	Tabular R. A.	Chronometer correction (ΔT.)
January 15, 1883.		h. m. s.	s.	s.	s.	s.	h. m. s.	h. m. s.	h. m. s.
32 Camelopardalis	E. s. p.	10 42 59.69	− .06	+ 2.60	− 7.72	+55.20	10 43 49.71	12 48 15.33	2 04 25.62
43 Cephei	E.	22 48 49.58	− .05	− 1.48	+10.50	−20.78	22 48 37.77	0 53 02.48	24.71
τ Piscium	E.	23 00 25.48	− .03	− .10	+ 0.92	+21.16	23 00 47.43	1 05 14.23	26.80
f Piscium	E.	23 06 56.38	− .02	− .04	+ 0.80	+22.88	23 07 20.00	1 11 46.71	26.71
☾ I	E.	23 19 49.63	[+68.37]	− .08	+ 0.85	+23.28	23 21 22.05		
									2 04 26.74 at $1^{h}.4$
January 23, 1883.									
α Cancri	W.	6 46 59.50	− .02	− .13	− 0.97	+20.91	6 47 19.29	8 52 07.64	2 04 48.35
☾ II	W.	6 57 54.70	[−63.94]	− .16	− 1.00	+21.65	6 57 11.25		
ξ Leonis	W.	7 20 30.86			Defect in record.				
o Leonis	W.	7 29 48.08	+ .05	− .18	− 0.97	+20.99	7 30 07.97	9 34 56.60	48.63
α Leonis	W.	7 57 02.37	+ .10	− .13	− 0.97	+20.88	7 57 22.25	10 02 10.61	48.36
30 Camelopardalis	W.	8 12 17.27	+ .12	− 4.18	− 7.95	− 4.51	8 12 00.75	10 16 51.20	50.45
226 Cephei	W. s. p.	20 24 44.45	+ .14	− 1.48	+ 3.83	+33.81	20 25 20.75	22 30 10.59	49.84
									2 04 48.45 at $9^{h}.0$
January 24, 1883.									
o Leonis	W.	7 29 46.12	− .03	− .16	− 0.99	+21.38	7 30 06.32	9 34 56.62	2 04 50.30
☾ II	W.	7 47 10.24	[−62.60]	− .14	− 1.01	+22.24	7 46 28.73		
π Leonis	W.	7 48 53.76	.00	− .14	− 0.98	+21.49	7 49 14.13	9 54 04.05	49.92
30 Camelopardalis	W.	8 12 14.42	+ .04	− 2.40	− 8.12	− 4.60	8 11 59.34	10 16 51.32	51.98
226 Cephei	W. s. p.	20 24 40.83	+ .06	+ 1.16	+ 3.91	+34.43	20 25 20.39	22 30 10.54	50.15
l Leonis	E.	8 37 55.84	+ .08	− .23	+ .99	+21.31	8 38 17.99	10 43 08.50	50.51
Groom., 1706	E.	8 45 41.79	+ .10	− 3.34	+ 4.82	+ 6.44	8 45 49.81	10 50 38.24	48.43
									2 04 50.18 at $9^{h}.9$
January 25, 1883.									
30 Camelopardalis	E.	8 11 58.40	− .04	− 3.20	+ 7.86	− 4.49	8 11 58.53	10 16 51.43	2 04 52.90
μ Leonis	E.	8 21 26.53	− .02	− .13	+ .95	+20.81	8 21 48.14	10 26 41.20	53.06
☾ II	E.	8 34 36.06	[−61.66]	− .10	+ .97	+21.96	8 33 57.23		
σ Leonis	E.	9 09 53.01	+ .06	− .14	+ .95	+21.09	9 10 14.97	11 15 08.16	53.19
τ Leonis	E.	9 16 41.85	+ .07	− .10	+ .94	+21.29	9 17 04.05	11 21 57.17	53.14
γ Cephei	E.	9 29 05.57	+ .09	+ 1.84	− 4.18	+34.96	9 29 38.28	11 34 32.24	53.96
γ Cephei	W.	9 28 58.42	+ .09	+ 2.31	+ 4.18	+34.96	9 29 39.96	11 34 32.24	52.28
π Virginis	W.	9 49 41.39	+ .13	− .13	− .95	+21.09	9 50 01.53	11 54 54.42	52.89
4 Draconis	W.	10 01 51.84	+ .16	− 2.04	− 4.62	+ 6.47	10 01 51.81	12 06 44.56	52.75
									2 04 53.07 at $10^{h}.6$
February 11, 1883.									
δ Pisicum	W.	22 36 37.46	− .04	− .07	− 0.95	+23.43	22 36 59.83	0 42 37.08	2 05 37 25
43 Cephei	W.	22 47 51.92	− .02	+ .01	−12.33	−21.50	22 47 18.08	0 52 55.65	37 57
☾ I	W.	22 59 29.27	[+69.12]	− .03	− 0.99	+24.20	23 01 01.57		
π Piscium	W.	23 24 55.08	+ .04	− .07	− 0.96	+23.14	23 25 17.23	1 30 54.48	37.25
ν Piscium	E.	23 29 17.83	+ .05	− .07	+ 0.94	+23.55	23 29 42.30	1 35 21.23	38.93
									2 05 37.56 at $1^{h}.1$
February 14, 1883.									
γ Camelopardalis	E.	1 31 37.83	− .04	− .20	+ 9.45	+33.52	1 32 20.56	3 38 04.74	2 05 44.18
ζ Ursæ Minoris	E. s. p.	13 41 05.37	− .02	+ .30	−15.00	+98.16	13 42 28.81	15 48 13.25	44.44
λ Tauri	E.	1 47 29.56	− .01	− .03	+ 3.15	+56.20	1 48 28.87	3 54 13.40	44.53
A′ Tauri	E.	1 51 05.86	− .01	− .05	+ 3.32	+54.67	1 52 03.79	3 57 48.39	44.60
☾ I	E.	1 55 54.15	[+69.97]	− .05	+ 3.40	+57.37	1 58 04.84		
ζ Tauri	E.	2 06 26.70	+ .02	− .08	+ 3.19	+55.67	2 07 25.50	4 13 09.78	44.28
ε Tauri	E.	2 15 06.20	+ .03	− .09	+ 3.26	+55.08	2 16 04.48	4 21 48.84	44.36
ε Ursæ Minoris	E. s. p.	14 50 31.35	+ .09	+ 1.34	−22.78	+119.72	14 52 09.72	16 57 53.24	(43.52)
ε Ursæ Minoris	W. s. p	14 49 46.46	+ .09	+ 3.95	+22.78	+116.45	14 52 09.73	16 57 53.24	(43.51)
Groom., 944	W.	3 20 29.88	+ .14	− 4.64	−36.31	− 39.84	3 19 09.23	5 24 53.12	43.89
α Orionis	W.	3 42 15.62	+ .18	− .14	− 3.11	+ 55.40	3 43 07.95	5 48 52.26	44.31
β Aurigæ	W.	3 44 31.83	+ .18	− .73	− 4.35	+ 48.16	3 45 15.09	5 50 59.59	44.50
									2 05 44.44 at $4^{h}.1$
February 15, 1883.									
Groom., 750	W.	1 56 02.27	− .10	− 7.31	−36.31	− 41.59	1 54 36.96	4 00 24.62	2 05 47.66
η Ursæ Minoris	W. s. p.	14 13 23.99	− .07	+ 2.19	+12.46	+ 88.07	14 15 06.64	16 20 53.84	47.20
α Tauri	W.	2 22 36.16	− .05	− .22	− 3.14	+ 53.33	2 23 26.08	4 29 14.15	48.07
τ Tauri	W.	2 28 38.84	− .04	− .24	− 3.26	+ 52.21	2 29 27.51	4 35 15.22	47.71
i Tauri	W.	2 37 56.12	− .03	− .24	− 3.20	+ 52.88	2 38 45.53	4 44 33.65	48.13
☾ I	W.	2 55 15.24	[+69.54]	− .30	− 3.34	+ 54.80	2 57 15.94		
β Tauri	E.	3 12 13.00	+ .03	− .28	+ 3.43	+ 51.25	3 13 07.43	5 18 55.95	48.52
Groom., 966	E.	3 17 50.66	+ .04	− 3.23	+11.60	+ 25.51	3 18 24.58	5 24 10.85	46.27
									2 05 48.05 at $5^{h}.0$

Star.	Ill'n.	Chronometer time, mean of threads.	Correction for— Rate.	Incl'n.	Coll'n.	Deviation.	Observed time of transit.	Tabular R. A.	Chronometer correction (ΔT.)
February 18, 1883.		h. m. s.	s.	s.	s.	s.	h. m. s.	h. m. s.	h. m. s.
25 Camelopardalis	E.	5 00 33.08	− .07	− 8.03	+23.94	− 7.00	5 00 41.92	7 06 35.80	2 05 53.88
r Draconis	E. s. p.	17 10 34.05	− .06	+ 3.14	−10.58	+ 84.03	17 11 50.58	19 17 44.38	53.80
8 Geminorum	E.	5 32 32.91			Defect in record.				
☾ I	E.	5 43 53.49	[+65.67]	− .45	+ 3.31	+ 56.37	5 45 58.39		
ζ^1 Cancri	E. (?)	5 58 41.84	+ .02	− .47	+ 3.23	+ 54.13	5 59 38.75	8 05 32.63	53.88
κ Cephei pr.	E.(?)s. p.	18 05 25.36	+ .04	+ 4.34	−14.03	+ 93.62	18 06 49.33	20 12 43.33	54.00
									2 05 53.88 at $7^h.9$

The following table gives the collimation and azimuthal deviation for each night of observation, as well as the resulting or observed right ascensions of the moon's center, denoted by α. It is found by adding to the (tabular) observed time of the transit of the moon's center, the (tabular) chronometer correction as deduced from moon-culminating stars, or from stars in about the same parallel as the moon. We have $\alpha_1 = \alpha_* + \theta - \theta_*$, where θ and θ_* are the sidereal times of culmination of the moon's center and the star respectively, and α_1 and α_* the corresponding right ascensions. The columns headed α_2 contain corresponding values for observation at Greenwich* and at Washington.†

Date.	Collimation.	Azimuth deviation.	α_1	α_2 Greenwich.	α_2 Washington.
1882.	s.	s.	h. m. s.	h. m s.	h. m. s.
Feb. 4	− 3.79	− 496.2	10 31 18.57		
Nov. 22	−11.93	+ 26.9	2 05 16.56		
24	−12.56	+ 26.4	4 09 02.81	3 57 47.10	
29	−12.01	+25.5 E., +24.8 W.	8 55 32.84		
Dec. 21	− 1.38	+ 20.9	3 41 39.05	3 30 43.15	
23	− 1.30	+ 23.2	5 43 34.04	5 32 43.78	
26	[− 0.86]	+ 20.3	8 32 27.16		
27	− 0.86	+ 25.6	9 22 59.22	9 14 05.79	
1883.					
Jan. 14	− 0.78	+ 25.6	0 29 25.15	0 19 21.82	
15	[− 0.80]	+ 23.3	1 25 48.79	1 15 36.41	
23	[− 0.95]	+ 21.8	9 01 59.70	8 52 53.50	
24	− 0.97	+ 22.2	9 51 18.91		
25	− 0.94	+ 21.7	10 38 50.30		
Feb. 11	− 1.80	+ 18.3	1 06 39.13	0 56 11.84	
14	− 3.08	+58.6 E., +57.0 W.	4 03 49.28		
15	− 3.01	+ 56.2	5 03 03.99		
18	− 3.07	+ 57.4	7 51 52.27	7 42 18.56	7 53 41.37

*Greenwich Observations in the years 1882 and 1883. London, 1884 and 1885.
†Astronomical and meteorological observations made during the year 1882 at the United States Naval Observatory, Washington, 1885, contains no corresponding observations; the observation of February 18, 1883, was kindly communicated by Commander A. D. Brown, U. S. N., Superintendent, Naval Observatory.

On the dates for which no corresponding observations could be found the hourly ephemeris of the Greenwich Nautical Almanac was corrected by means of Greenwich and Washington observations on days preceding and following the date of the Fort Conger observation. The actual correction (c) for that date was found by interpolation.

We have the following corrections to the moon's tabular right ascensions:*

		s.
From Greenwich and Washington observations	Feb. 4, 1882	−0.90
	Nov. 22, 1882	−0.85
	Nov. 29, 1882	−0.66(?)
	Dec. 26, 1882	−0.68
	Jan. 24, 1883	−0.05
	Jan. 25, 1883	−0.09
	Feb. 14, 1883	+0.10
	Feb. 15, 1883	0.00

*The reference to the Greenwich hourly ephemeris in the Nautical Almanac was here preferred; it may be noticed that between 1882 and 1883 a change in the lunar tables was made in the American ephemeris, 1882 being the last year in which Peirce's tables were used, and 1883 the first in which Hansen's tables (with Newcomb's corrections) were introduced, the same as in the Nautical Almanac.

By aid of the corresponding observations and these tabular corrections we obtain the following results for the longitude of Fort Conger.—(For method see Chauvenet, Vol. I, Art. 234.)

Place. Date.	Fort Conger, Feb. 4, 1882.	Fort Conger, Nov. 22, 1882.	Fort Conger, Nov. 24, 1882.	Greenwich, Nov. 24, 1882.	Fort Conger, Nov. 29, 1882.	Fort Conger, Dec. 21, 1882.	Greenwich, Dec. 21, 1882.	Fort Conger, Dec. 23, 1882.	Greenwich, Dec. 23, 1882.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
a_0	10 29 48.18	2 4 37.02	4 8 33.50	3 56 1.57	8 54 15.34	3 39 17.63	3 29 32.74	5 41 28.86	5 31 48.5
$a_1 - a_0$	1 30.39	39.54	29.31	1 45.53	1 17.50	2 21.42	1 10.71	2 5.18	55.28
T_1	17 49 9.9	14 16 18.4	16 11 41.7	11 42 6.4	20 38 28.3	13 57 56.5	9 29 2.9	15 51 53.9	11 22 49.1
Sid. T. M. N.	20 58 11.4	16 5 28.7	16 13 21.9	16 13 21.9	16 33 4.6	17 59 48.9	17 59 48.9	18 7 42.0	18 7 42.0
Reduction	2 55.6	2 20.7	2 39.6	1 55.3	3 23.4	2 17.6	1 33.5	2 36.4	1 52.2
θ_1	38 50 16.9	30 24 7.8	32 27 43.2	27 57 23.6	37 14 56.3	32 00 03.0	27 30 25.3	34 2 12.3	29 32 23.3
a_1	10 31 18.6	2 5 16.6	4 9 2.8	3 57 47.1	8 55 32.8	3 41 39.0	3 30 43.4	5 43 34.0	5 32 43.8
L_1 and L_2			4 18 40.4	−23.5		4 18 24.0	−18.1	4 18 38.3	−20.5
λ	4 18 58.3	4 18 51.2	4 18 63.9		4 18 83.5*	4 18 42.1		4 18 58.8	

Place. Date.	Fort Conger, Dec 26, 1882.	Fort Conger, Dec. 27 1882.	Greenwich, Dec. 27, 1882.	Fort Conger, Jan. 14, 1883.	Greenwich, Jan. 14, 1883.	Fort Conger, Jan. 15, 1883.	Greenwich, Jan. 15, 1883.	Fort Conger, Jan. 23, 1883.	Greenwich, Jan. 23, 1883.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
a_0	8 31 27.08	9 22 29.67	9 12 29.59	0 28 57.41	0 17 42.52	1 25 37.96	1 [illegible] 13.55	9 1 43.03	8 51 29.57
$a_1 - a_0$	1 00.08	29.55	1 36.20	27.74	1 39.30	10.83	1 22.86	16.67	1 23.93
T_1	18 28 42.2	19 14 50.8	14 47 54.0	9 12 19.1	4 44 10.4	10 4 44.3	5 36 22.7	17 8 11.4	12 40 52.9
Sid. T. M. N.	18 19 31.7	18 23 28.2	18 23 28.2	19 34 26.3	19 34 26.3	19 38 22.8	19 38 22.8	20 9 55.3	20 9 55.3
Reduction	3 2.1	3 9.7	2 25.9	1 30.7	46.7	1 39.3	55.3	2 48.9	2 5.0
θ_1	36 51 16.0	37 41 28.7	33 13 48.1	28 48 16.1	24 19 23.4	29 44 46.4	25 15 40.8	37 20 55.6	32 52 53.2
a_1	8 32 27.2	9 22 59.2	9 14 5.8	0 29 25.2	0 19 21.8	1 25 48.8	1 15 36.4	9 1 59.7	8 52 53.5
L_1 and L_2		4 18 29.5	−17.7	4 18 50.9	+ 1.6	4 18 57.6	+ 4.4	4 18 55.9	− 0.3
λ	4 18 48.8	4 18 47.2		4 18 49.3		4 18 53.2		4 18 56.2	

Place. Date.	Fort Conger, Jan. 24, 1883.	Fort Conger, Jan. 25, 1883.	Fort Conger, Feb. 11, 1883.	Greenwich, Feb. 11, 1883.	Fort Conger, Feb. 14 1883.	Fort Conger, Feb. 15, 1883.	Fort Conger, Feb. 18, 1883.	Greenwich, Feb. 18, 1883.	Washington, Feb. 18, 1883.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	These observations give
a_0	9 49 34.39	10 37 40.02	1 4 20.33	0 54 59.83	4 2 3.72	5 1 30.66	7 51 18.55	7 40 34.67	the correction
$a_1 - a_0$	1 44.52	1 10.28	2 18.80	1 12.01	1 45.56	1 33.33	33.72	1 43.89	to Ephemeris
T_1	17 53 30.6	18 37 5.0	7 59 22.8	3 30 51.0	10 44 13.4	11 39 30.5	14 15 47.0	9 48 13.8	—.18s; hence
Sid. T. M. N.	20 13 51.8	48.4	21 24 49.8	21 24 49.8	21 36 39.5	21 40 36.0	21 52 25.7	21 52 25.7	the Fort Con-
Reduction	2 56.3	3.5	1 18.7	34.6	1 45.8	1 54.9	2 20.6	1 36.6	ger observa-
θ_1	38 10 18.7	18 37 56.9	29 25 31.3	24 56 15.4	32 22 38.7	33 22 1.4	35 10 33.3	31 42 16.1	tions give λ=
a_1	9 51 18.9	10 38 50.3	1 6 39.1	0 56 11.8	4 3 49.3	5 3 4.0	7 51 52.3	7 42 18.6	h. m. s.
L_1 and L_2			4 18 52.2	+ 3.6			4 18 41.0	− 2.5	4 18 46.1
λ	4 18 59.8	4 18 66.6	4 18 48.6		4 18 49.4	4 18 57.4	4 18 43.5		Mean, 4 18 44.8

* If no correction is applied, $\lambda = 4^h\ 18^m\ 63.9^s$.

Arranging the results for longitude according to limb of moon, we have:

λ from ☾ I				λ from ☾ II			
1882.	*h.*	*m.*	*s.*	1882.	*h.*	*m.*	*s.*
Nov. 22	4	18	51.2	Feb. 4	4	18	58.3
Dec. 21			42.1	Nov. 24			63.9
Dec. 23			58.8	Nov. 29			63.9
1883.				Dec. 26			48.8
Jan. 14			49.3	Dec. 27			47.2
Jan. 15			53.2	1883.			
Feb. 11			48.6	Jan. 23			56.2
Feb. 14			49.4	Jan. 24			59.8
Feb. 15			57.4	Jan. 25			66.6
Feb. 18			44.8	Mean	4	18	58.1
Mean	4	18	50.5				

Hence longitude of Fort Conger from seventeen moon culminations = 4 *h.* 18 *m.* 54.3 *s.*

With an approximate probable error $0.675\sqrt{\frac{[vv]}{n(n-2)}} = \pm 1.2$

The difference in the results for ☾ I and ☾ II is mainly due to difference of personal equation, and of irradiation for the two limbs (the difference is about a quarter of a second). It was not found practicable to introduce special weights to the individual longitude results, the hypothesis of equal weights being considered safer.

(C) Longitude by Means of Occultations.

Three occultations were observed at Fort Conger, viz: Of δ Piscium, October 24, 1882, this being marked doubtful, and hence received no further consideration; of the same star on January 14, 1883, and of ϵ Tauri on February 14, 1883. For these two dates we have the chronometer corrections from the transit observations and comparisons, as follows:

[1883. January 14. Fort Conger. Immersion of δ Piscium by sid. chronometer Frodsham No. 2490, $4^h\ 09^m\ 38.16^s$.]

		h.	m.	s.
From transit observations at 0.5^h, sid. time, we have	$\Delta T = +$	2	04	24.36
And the hourly rate	$\delta T = +$			0.095
Hence, for time of immersion	$\Delta T = +$	2	04	24.90
And local sid. time of immersion		6	14	03.06
Hence, approximate local mean time		10	37	09.65
Approximate Greenwich mean time		14	56	03.

(For notation, see Chauvenet, Vol. I, Art. 341.)

From the Berlin Jahrbuch we take

$\alpha' = 0^h\ 42^m\ 37.49^s$ or $10°\ 39'\ 22.35''$

$\delta' = +6°\ 56'\ 56.51''$

And from the American Ephemeris, corrected: *

Greenwich M. T.	α	δ	π
h.	° ′ ″	° ′ ″	′ ″
14	10 03 26.10	+7 34 02.35	59 20.22
15	10 37 17.85	7 45 33.95	19.57
16	11 11 10.65	7 57 02.65	18.91
17	11 45 04.50	8 08 28.35	18.25

Greenwich M. T.	x	x'	y	y'
h.				
14	−0.60039	+0.56576	+0.62560	+0.19407
15	−0.03466	74	0.81962	398
16	+0.53107	69	1.01357	389
17	+1.09672	62	1.20741	380

$t = 10^h\ 37^m\ 09.65^s$ $\phi = 81°\ 44'\ 00''$

$t + \omega = 14\ 56\ 03.1$ $\phi' = 81\ 40\ 43$

$\mu = 93°\ 30'\ 45.90''$

$\mu - \alpha' = 82\ 51\ 23.55''$

$B = 88°\ 57'\ 28.7''$ T_0 assumed 14.95^h

$\xi = +0.14313$ $x_0 = -0.06295$

$\eta = +0.97683$ $y_0 = +0.80992$

$M = 230°\ 59'\ 44''$

$N = 71\ 04\ 24$

$\psi = 160\ 29\ 36$

		h.	m.	s.
T_0		14	57	00
Sid. T. M. N.,		19	34	26.2
Reduction,			2	27.35
μ_0		10	33	53.6
μ		6	14	03.1
$\mu_0 - \mu$		4	19	50.5
τ	−			47.8
λ		4	19	02.7

[1883. February 14. Fort Conger. Immersion of ϵ Tauri by sid. chronometer No. 198, $11^h\ 37^m\ 44.5^s$.]

		h.	m.	s.
From transit observations at 4.1^h, sid. time, we have for No. 2490	$\Delta T = +$	2	05	44.44
And per hour	$\delta T = +$			0.144
Chronometer comparisons, February 14:				
No. 124 (mean time)		12	16	58
And No. 124 (mean time)		12	18	01
No. 2490 (sid. time)		8	38	31.5
No. 198 (sid. time)		10	47	27
Interval between comparisons, in mean time	=		1	03.0
In sid. time			1	03.16
Difference of Nos. 2490 and 198	=	2	08	55.5
Hence, corrected difference	=	2	07	52.34
ΔT of No. 2490	+	2	05	45.42
ΔT of No. 198	−		2	06.92
Local sid. time of immersion		11	35	37.58
Approximate local mean time		13	55	58.3
Approximate Greenwich mean time		18	14	51.8

$\alpha' = 4^h\ 21^m\ 48.84^s$ or $65°\ 27'\ 12.60''$

$\delta' = +18°\ 55'\ 08.14''$

From American Ephemeris, corrected: †

Greenwich M. T.	α	δ	π
h.	° ′ ″	° ′ ″	′ ″
17	64 41 25.95	+19 33 19.64	57 57.16
18	65 17 11.10	19 36 16.44	55.58
19	65 52 55.50	19 39 05.94	53.99
20	66 28 39.30	19 41 48.34	52.38

Greenwich M. T.	x	x'	y	y'
h.				
17	−0.74436	+0.58131	+0.66065	+0.04970
18	−0.16304	32	0.71029	59
19	+0.41829	32	0.75984	52
20	+0.99961	31	0.80935	50

$t = 13^h\ 55^m\ 58.31^s$

$t + \omega = 18\ 14\ 51.81$

$\mu = 173°\ 54'\ 23.7''$

$\mu - \alpha' = 108\ 27\ 11.1$

$B = 92°\ 39'\ 02.6''$ T_0 assumed 18.2^h

$\xi = +0.13683$ $x_0 = -0.04677$

$\eta = +0.94776$ $y_0 = +0.72021$

$M = 218°\ 53'\ 53''$

$N = 85\ 07\ 34$

$\psi = 129\ 15\ 01$

		h.	m.	s.
T_0		18	12	00
Sid. T. M. N.,		21	36	39.4
Reduction,			2	59.4
μ_0		15	51	38.8
μ		11	35	37.6
$\mu_0 - \mu$		4	16	01.2
τ	+		3	04.2
λ		4	19	05.4

Mean resulting longitude of Fort Conger, from observations of 2 occultations, $\lambda = 4^h\ 19^m\ 04.0^s$.

* $+.03^s$ in α and $-.35''$ in δ, Greenwich observations for 1883.

† $+.07^s$ in α and $-.46''$ in δ, Greenwich observations for 1883.

(D)—Longitude by Means of Lunar Distances.

There are on record three observations of distances between the moon and Jupiter and one between the moon and Saturn, viz:

	Date.	Sextant No.	Sid. chron. No.
☾ and Jupiter	Dec. 28, 1881	1560	198
☾ and Jupiter	Nov. 22, 1882	1475	198
☾ and Jupiter	Nov. 24, 1882	1475	198
☾ and Saturn	Nov. 24, 1882	1475	198

The record of the first measure is as follows:

Chronometer time.			Observed distance.			
h.	*m.*	*s.*	°	′	″	
6	05	15.5	25	56	30	Index correction + 8′ 00″
	08	20.0		55	45	Temp. of air — 40° Fah.
	11	30.3		53	05	Pressure of air 30.0 inches
	15	42.0		50	10	
	17	42.5		48	15	
	20	55.3		45	40	
6	13	14.3	25	51	34.2	

Transit reductions for December 28, 1881, give approximately $\varDelta T = 1^h\ 48^m\ 58.22^s$ for chronometer No. 2490 at 21.4^h sid. time. The uncertainty in $\varDelta T$ is several seconds. The rate, about 3.0^s daily losing, is also uncertain.

Comparisons:

	h.	*m.*	*s.*		*h.*	*m.*	*s.*
No. 124 (M. T.)	17	14	16.0	No. 124 (M. T.)	17	17	59.5
No. 2490 (Sid. T.)	5	41	56	No. 198 (Sid. T.)	11	57	09.0

	h.	*m.*	*s.*
Whence at time of observation $\varDelta T$ for No. 198 =	−4	22	29.3
Sid. time of observation θ =	1	50	45.0
Local mean time T =	7	20	27.9

Applying the practically rigorous method of Chauvenet, Vol. I, Art. 250, no satisfactory result could be obtained. The sextant may have been handled unskillfully or may have been out of adjustment.

The record of the second measure is as follows:

From transit observation on November 22, 1882, $\varDelta T = +2^h\ 02^m\ 13.51^s$ at 2.1^h sid. time.
Daily rate of No. 2490, $+2.56^s$.

Chronometer time.			Observed distance.			
h.	*m.*	*s.*	°	′	″	
7	03	22.3	65	43	50	Index correction + 6′ 30″
	05	05.4		43	00	Temp. of air — 32.4° Fah.
	07	03.8		42	40	Pressure 30.3 in.
7	05	10.5	65	43	10	

Comparisons:

	h.	*m.*	*s.*		*h.*	*m.*	*s.*
No. 124	11	38	33	No. 124	11	39	17
No. 2490	2	33	35.5	No. 198	9	09	21

	h.	*m.*	*s.*
Hence $\varDelta T$ for No. 198 =	− 4	32	47.6
Sid. time of observation θ =	2	32	22.9
Local mean time T =	10	24	29.1

Inspection showed that there was a misreading in the degrees of the distance; 55° in the place of 65° gave an approximate longitude result; but neither this supposition nor that of 56° proved satisfactory.

The record of the third case is as follows:

From transits on November 24, 1882, $\Delta T = +\,2^h\,02^m\,18.63^s$, at 4.2^h sid. time. Daily rate of No. 2490 $= +\,2.56^s$. Rate of No. 198, nearly zero.

Chronometer time.			Observed distance.		
h.	m.	s.	°	′	″
9	17	00.5	24	46	40
	19	11.8		46	30
	24	03.0		45	40
9	20	05.1	24	46	16.7

Index correction + 6′ 10″

Temp. — 31° Fah.

Pressure 30.2 in.

Comparisons:

	h.	m.	s.		h.	m.	s.
No. 124	12	08	59	No. 124	12	10	41
No. 2490	3	11	55.5	No. 198	9	48	44

		h.	m.	s.
Hence ΔT for No. 198	$=-$	4	32	47.5
Sid. time of observation	$\theta =$	4	47	17.6
Local mean time	$T =$	12	31	09.9

This case seems to be similar to the first; no satisfactory result could be deduced; the comparatively small distance is also an unfavorable feature.

The fourth and last case had to be dismissed with the remark that the measured distance was but 12° 09′; hence the observation was unfit for the purpose of deducing the longitude.

Thus neither the chronometric method nor the method of lunar distances could add anything to the accuracy of the result deduced from the series of moon culminations and occultations.

Resulting longitude of Fort Conger Station.

	h.	m.	s.	s.
From 17 moon culminations . . .	4	18	54.3	± 1.2
From 2 occultations			64.0	
By combination, final result . . .	4	18	55.3	± 1.2
	or 64° 43′ 50″ ± 18″ W. of Greenwich.			

The probable error must be considered subject to an increase due to an unknown constant error peculiar to the method used. For convenience of reference we add—

	h.	m.	s.		°	′	″
Telegraphic longitude of Washington,* United States Naval Observatory . . .	5	08	12.04	or	77	03	00.6 W.
Longitude of Göttingen	0	39	46.24		9	56	33.6 E.
Göttingen, east of Fort Conger	4	58	41.5		74	40	23

In connection with the results of the magnetic observations made by the officers of Her Majesty's Ship *Discovery* in 1875–'76, Staff-Commander E. W. Creak, Royal Navy, gives† the longitude of the winter quarters of that ship 65° 3′ W. The map facing page 87, Vol. I, *Three Years of Arctic Service*, gives, on the authority of Lieutenant Archer, Royal Navy, the longitude 64° 45′ W. This value was temporarily adopted by Lieutenant Greely while at Fort Conger; consequently the times assigned by him for the Göttingen hours may be taken as correct within about four and one-half seconds.

* U. S. Coast and Geodetic Survey Report for 1884. Appendix No. 11.

† Proceedings of the Royal Society, No. 196, 1879.

RECORD AND RESULTS OF THE MAGNETIC OBSERVATIONS AT FORT CONGER, 1881-83. ABSOLUTE AND RELATIVE OBSERVATIONS.

(1) MEASURES OF MAGNETIC DECLINATION.

The magnetometer by means of which the absolute and differential measures of the declination were observed was a new instrument, known as Coast and Geodetic Survey No. 12, and made by Fauth & Co., of Washington, D. C. With the exception of the measure of the coefficient of temperature of the intensity magnet, no instrumental constants were fully determined at Washington, Sergeant Israel being obliged to devote the short remaining time to the practice of transits and pendulum manipulation. The constants will be given in the place where they are required. When the instrument is used as a declinometer the scale of the collimator magnet is read by means of a small (inverting or astronomical) telescope of 9^{cm} focal length and aperture of 15^{mm}. This telescope is firmly attached to the plate supporting the box with the suspended magnet. The suspension tube is 20^{cm} in height, and a single fiber of unspun cocoon suffices to bear the weight of the magnet. Dimensions of magnets: Intensity, or long, magnet (used for declination), length 65^{mm}, outer diameter 8^{mm}; short magnet (suspended during observations of deflections), length 50^{mm}, diameter 8^{mm}. The scale of the declination magnet extends nearly across the lens, and is marked with the numbers 0, 1, 2, 3, 4, 5, to be read as 0, 10, 20, etc.; tenths of divisions are estimated. The scale is considered erect when the figures are below the scale and appear to increase from left to right, and an *increase* of scale reading denotes a movement of the north end of the magnet towards the *east*. The angular value of a scale division is given by the observer as 2.737′. There is apparently no record preserved, but I have verified this value. When the scale of the long magnet is erect *increasing* scale readings correspond to *decreasing* circle readings.

The following record contains all readings made by Sergeant Israel at Fort Conger for the determination of the magnetic axis of the long magnet:

June 22, 1882.					
M.	Scale.		Mean.	Alternate mean.	Axis.
	d.	*d.*	*d.*	*d.*	*d.*
E	10.9	27.2	19.05		
I	16.2	28.3	22.25	18.50	20.37
E	12.1	23.8	17.95	26.60	22.28
I	5.9	56.0	30.95	17.97	24.46
E	7.0	29.0	18.00	30.88	24.44
I	28.7	32.9	30.80	14.72	22.76
E	4.9	18.0	11.45	29.65	20.55
I	13.1	43.9	28.50	13.25	20.87
E	6.9	23.2	15.05		
Mean					22.25

August 2, 1882.					
M.	Scale.		Mean.	Alternate mean.	Axis.
	d.	*d.*	*d.*	*d.*	*d.*
E	33.1	44.0	38.55		
I	0.0	3.5	1.75	37.43	19.59
E	34.1	38.5	36.30	4.05	20.18
I	3.8	8.9	6.35	34.15	20.25
E	25.0	39.0	32.00	7.98	19.99
I	8.2	11.0	9.60	34.45	22.02
E	30.1	43.7	36.90		
I					
E					
Mean					20.41

September 2, 1882.					
M.	Scale.		Mean.	Alternate mean.	Axis.
	d.	*d.*	*d.*	*d.*	*d.*
E	22.3	25.9	24.10		
I	14.9	23.2	19.05	24.93	21.99
E	19.7	31.8	25.75	19.33	23.54
I	12.3	26.9	19.60	26.05	22.82
E	19.9	32.8	26.35	19.37	22.86
I	13.3	25.0	19.15	26.30	22.73
E	24.4	28.1	26.25		
I					
E					
Mean					22.59

September 16, 1882.					
M.	Scale.		Mean.	Alternate mean.	Axis.
E	19.0	25.2	22.10		
I	20.3	25.0	22.65	20.93	21.79
E	14.6	24.9	19.75	21.55	20.65
I	15.0	25.9	20.45	21.97	21.21
E	17.8	30.6	24.20	20.60	22.40
I	17.8	23.7	20.75	23.83	22.29
E	18.0	28.9	23.45		
Mean					21.67

October 17, 1882.					
M.	Scale.		Mean.	Alternate mean.	Axis.
E	21.1	45.1	33.10		
I	25.9	39.0	32.45	33.03	32.74
E	21.9	44.0	32.95	30.80	31.88
I	19.1	39.2	29.15	33.87	31.51
E	22.8	46.8	34.80	29.70	32.25
I	22.5	38.0	30.25	34.80	32.52
E	29.8	39.8	34.80		
Mean					32.18

December 5, 1882.					
M.	Scale.		Mean.	Alternate mean.	Axis.
E	20.0	26.0	23.00		
I	37.3	43.2	40.25	25.87	33.06
E	18.2	39.3	28.75	37.93	33.34
I	23.9	47.3	35.60	29.60	32.60
E	28.0	32.9	30.45	35.80	33.12
I	30.6	41.4	36.00	31.40	33.70
E	27.8	36.9	32.35		
Mean					33.16

December 15, 1882.

M.	Scale.		Mean.	Alternate mean.	Axis.
	d.	*d.*	*d.*	*d.*	*d.*
E	21.4	28.0	24.70		
I	17.0	33.0	25.00	24.38	24.69
E	14.0	34.1	24.05	25.67	24.86
I	12.5	40.2	26.35	22.95	24.65
E	12.9	30.8	21.8	27.32	24.58
I	24.3	32.3	28.30	23.08	25.69
E	18.3	30.3	24.30		
Mean					24.89

January 16, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
	d.	*d.*	*d.*	*d.*	*d.*
E	20.9	26.3	23.60		
I	10.3	35.0	22.65	24.83	23.74
E	19.2	32.9	26.05	21.93	23.99
I	15.3	27.1	21.20	27.02	24.11
E	26.2	29.8	28.00	20.48	24.24
I	10.8	28.7	19.75	28.55	24.15
E	23.0	35.2	29.10		
Mean					24.05

February 1, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
	d.	*d.*	*d.*	*d.*	*d.*
E	20.3	28.9	24.60		
I	23.2	43.8	33.50	21.78	27.64
E	4.4	33.5	18.95	35.65	27.30
I	28.8	46.8	37.80	18.12	27.96
E	13.0	21.6	17.30	39.48	28.39
I	32.8	49.5	41.15	17.85	29.50
E	13.8	23.0	18.40		
Mean					28.16

February 15, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	23.1	25.8	24.45		
I	22.0	44.1	33.05	23.50	28.28
E	4.4	40.7	22.55	34.53	28.54
I	25.3	46.7	36.00	22.35	39.18
E	19.1	25.2	22.15	34.53	28.34
I	26.8	39.3	33.05	22.40	27.72
E	22.3	23.0	22.65		
Mean					28.41

March 1, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	28.2	29.9	29.05		
I	34.2	41.2	37.70	27.28	32.49
E	19.8	31.2	25.50	38.58	32.04
I	32.1	46.8	39.45	25.97	32.71
E	24.9	28.0	26.45	40.05	33.25
I	33.2	48.1	40.65	25.78	33.21
E	19.8	30.4	25.10		
Mean					32.74

March 15, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	15.9	18.9	17.40		
I	24.0	38.0	31.40	16.32	23.86
E	10.4	20.1	15.25	32.03	23.64
I	25.2	40.1	32.65	17.90	25.28
E	18.2	22.9	20.55	28.17	24.36
I	23.0	24.4	23.70	21.92	22.81
E	29.7	16.9	23.30		
Mean					23.99

April 1, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	24.1	28.9	26.50		
I	17.1	25.0	21.05	28.03	24.54
E	26.2	32.9	29.55	19.37	24.46
I	9.1	26.3	17.70	29.68	23.69
E	19.0	40.6	29.80	18.18	23.99
I	13.6	23.7	18.65	30.85	24.75
E	27.7	36.1	31.90		
Mean					24.29

April 15, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	18.4	33.0	25.70		
I	20.2	35.8	28.00	25.88	26.94
E	19.3	32.8	26.05	27.48	26.76
I	20.1	33.8	26.95	25.93	26.44
E	20.8	30.8	25.80	27.58	26.69
I	22.1	34.3	28.20	25.20	26.70
E	20.0	29.2	24.60		
Mean					26.71

May 1, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	20.2	30.2	25.20		
I	33.1	45.0	39.05	26.43	32.74
E	24.1	31.2	27.65	37.85	32.75
I	30.5	42.8	36.65	27.43	32.04
E	20.0	34.4	27.20	38.12	32.66
I	31.1	48.1	39.60	25.20	32.40
E	20.1	26.3	23.20		
Mean					32.52

May 15, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	18.4	24.9	21.65		
I	28.2	38.6	33.40	20.65	27.02
E	14.3	25.0	19.65	35.83	27.74
I	33.7	42.8	38.25	16.60	27.42
E	9.6	17.5	13.55	38.47	26.01
I	30.2	47.2	38.70	13.95	26.32
E	10.0	18.7	14.35		
Mean					26.90

June 15, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	13.8	20.2	17.00		
I	26.7	44.7	35.70	16.90	26.30
E	15.9	17.7	16.80	37.95	27.38
I	36.1	44.3	40.20	14.25	27.22
E	10.0	13.4	11.70	42.65	27.18
I	41.1	49.1	45.10	7.45	26.28
E	0.0	6.4	3.20		
Mean					26.87

July 5, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	9.1	33.1	21.10		
I	19.1	32.2	25.65	24.37	25.01
E	19.2	38.1	27.65	24.20	25.92
I	19.8	25.7	22.75	30.10	26.42
E	25.3	39.8	32.55	22.30	27.42
I	12.2	31.5	21.85	30.12	25.98
E	18.5	36.9	27.70		
Mean					26.15

August 8, 1883.

M.	Scale.		Mean.	Alternate mean.	Axis.
E	20.0	29.9	24.95		
I	19.9	31.3	25.60	25.98	25.79
E	20.3	33.7	27.00	24.12	25.56
I	19.2	26.1	22.65	26.17	24.41
E	21.6	29.1	25.35	24.37	24.86
I	22.1	30.1	26.10	25.00	25.55
E	20.0	29.3	24.65		
Mean					25.23

It would appear that the variation in the position of the axis bears some remote relation to temperature, *i. e.* the readings for the axis appear smaller in summer than in winter. If this be so, the shifting might be explained by the supposition of unequal hardness or unequal capacity for magnetism at different temperatures for different parts of the magnet. In converting scale-readings into absolute measure a simple interpolation gave the value for each intermediate day.

During the first ten months of the occupation of the station a series of hourly observations of the declination was made on three days (generally the 20th, 21st, and 22d) in each month. Table I presents this series, as computed by the observers, since the original scale-readings were not brought home; it is stated that the results given were each the mean of the two extreme readings of an oscillation of the magnet, and it was a matter of remark that the magnet never appeared to be at rest, this extreme mobility being greatly facilitated by the small mass of the magnet. In order to extract some more information from the table, I have completed a year's record by adding thereto the results for July and August, 1882, taken from the regular or international series which commenced with August 1, 1882, and ended with August 31, 1883.

The readings of the magnetic axis for these months being known, and the readings of the mark, the azimuth circle, and the scale (the mean of 5 readings) being given, the absolute declination is readily obtained.

To convert relative measures (or scale-readings) of the declination into absolute measure, let D = the west declination, and

a = reading of axis of magnet.
s = reading of scale of magnet.
c = reading of circle of magnetometer.
m = reading of mark.
n = value of a scale division in minutes of arc = $2'.737$, then

$$D = 224^\circ\ 44'.3 + m - c + 2'.737\ (a - s)$$

Magnetic declination, Fort Conger, Lady Franklin Bay, Grinnell Land.

[92° west + tabular quantity. Reduction to local mean time = $-4^h\ 58.7^m$. Magnetometer No. 12.]

Day of month.	Göttingen hours.													
	1	2	3	4	5	6	7	8	9	10	11	Noon.	13	14
1881.	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
Sept. 16														
17	7 31.9	7 49.5	7 19.2	7 04.7	7 00.8	6 29.[illegible]	7 03.8	7 08.3	7 40.5	7 44.[illegible]	7 50.8	7 36.3	8 15.1	8 29.0
18	7 34.6	7 28.3	7 23.5	7 24.[illegible]	7 29.2	7 32.[illegible]	7 18.0	7 27.7	7 26.5	7 28.3	7 23.2	7 37.2	7 51.7	7 39.8
19	7 55.8	7 53.1	8 07.2	7 50.3	8 01.[illegible]	[illegible]	7 53.9	7 43.5	7 54.8	7 50.2	7 58.7	8 06.6	8 06.9	8 06.2
Oct. 20						8 [illegible]4.7	8 08.2	8 13.0	8 39.7	8 18.9	8 26.3	8 55.6	8 33.8	8 46.9
21	8 45.9	8 33.3	8 19.3	8 19.4	[illegible]	8 18.5	8 18.5	8 19.9	8 20.0	8 20.0	8 31.0	8 49.7	8 49.6	8 37.7
22	7 52.6	8 17.7	8 14.3	7 3[illegible].9	[illegible]	7 4[illegible].0	8 28.2	8 43.4	8 23.1	8 30.3	8 46.9	8 33.4	8 42.6	8 45.2
23	8 34.0	8 22.2	8 35.9	8 22.5	8 35.[illegible]									
Nov. 19														
20	7 57.8	8 01.4	6 57.6	8 18.7	7 22.2	8 10.3	7 32.9	7 58.7	7 52.6	7 45.2	7 56.2	7 56.2	7 56.5	7 49.8
21	7 49.4	7 29.0	7 28.9	7 45.8	7 45.4	7 38.3	7 46.1	7 42.8	7 45.0	7 46.8	7 43.5	7 44.2	7 38.6	7 36.8
22	13 25.0	13 29.8	13 26.3	9 21.2	9 27.1	9 24.2	9 31.0	9 34.7	9 30.9	9 29.8	9 32.4	9 34.7	9 35.4	9 38.4
Dec. 19														
20	5 49.7	5 37.7	5 23.7	5 12.5	5 04.4	3 53.9	3 54.0	4 48.6	4 32.8	4 43.8	4 28.9	4 24.6*	4 20.3	4 25.8
21	7 26.4	7 07.8	6 34.2	7 00.7	6 23.4	6 38.8	6 32.4	6 46.5	6 39.8	6 38.1	6 19.8	6 31.2	6 36.1	7 04.4
22	8 10.2	8 09.1	8 03.2	7 54.3	7 45.3	7 58.6	7 54.8	7 44.8	7 43.5	7 38.5	7 41.9	7 43.5	7 24.4	7 49.0
1882. Jan. 19														
20	8 12.9	5 42.5	6 31.1	7 08.1	7 19.1	6 53.7	6 04.8	6 09.1	7 00.5	7 32.2	7 53.3	7 32.9	7 52.5	7 47.0
21		8 12.1	8 10.8							(5 20.5	5 37.8	6 04.6	6 09.6	5 44.7
22	7 20.4	7 14.2	7 26.9	6 51.6	6 35.9	6 46.4	7 28.5	7 00.1	7 04.1	7 17.5	7 17.6	7 15.0	7 5[illegible].0	7 48.4
23	6 59.4	7 00.3	6 31.6	7 10.0	7 12.0	7 07.3	7 11.3	7 07.2	6 54.8	6 42.9	7 11.7	7 10.6		
Feb. 20														
21	8 05.9	7 46.6	8 04.5	7 55.5	7 19.6	7 52.2	8 18.2	7 53.9	8 21.8	8 07.2	8 11.4	7 40.0	8 30.8	8 23.5
22	8 56.4	8 25.6	8 31.4	8 26.2	8 17.8	8 32.1	8 36.0	7 50.7	8 22.1	8 29.6	8 33.1	8 21.4	9 00.5	8 51.4
23	8 14.2	8 28.0	7 57.8	8 00.7	8 36.5	7 58.1	8 41.3	8 10.2	8 29.8	8 38.3	8 54.7	8 40.1	8 59.5	9 00.0
Mar. 15														
16	3 59.4	4 02.4	4 01.4	3 50.8	3 00.0	2 48.0)	8 08.9	8 01.1	7 44.9	8 05.3	7 59.4	9 37.3	9 02.0	10 10.4
17	8 14.3	8 09.4	8 03.9	8 16.8	8 15.4	3 05.1	8 11.4	8 24.0	8 23.1	8 21.3	8 34.8	8 33.7	8 45.8	8 39.7
18	8 08.5	8 13.0	8 16.0	8 08.8	8 17.6	8 06.5	8 12.0	7 58.5	8 23.2	8 27.5	8 38.1	8 26.1	8 15.2	7 52.2
Apr. 19														
20	8 24.6	9 39.2	7 55.2	8 45.1	7 44.9	7 41.8	3 24.9	2 49.8	9 01.3	4 47.9	8 34.1	6 01.3	3 53.7	7 59.9
21	9 11.5	7 00.5	6 18.2	6 00.2	5 33.6	5 41.8	4 53.7	6 13.3	6 17.3	7 00.7	6 48.0	6 31.8	7 30.5	6 37.2
23	7 56.2	7 31.6	7 03.0	7 45.9	6 56.0	6 57.5	6 54.6	7 16.8	8 11.2	7 42.9	6 53.0	7 59.9	7 52.5	8 25.1
May 18														
19	8 18.5	7 56.1	7 12.0	7 43.8	6 59.4	7 07.5	6 42.7	7 45.3	7 11.6	8 41.1	8 37.1	8 44.7	8 34.8	7 49.5
20	7 05.0	8 44.8	7 30.0	6 57.9	6 33.4	8 10.8	9 02.8	6 33.7	6 58.0	8 10.0	7 05.7	7 39.5	7 43.3	7 38.0
21	7 27.5	8 18.0	8 01.1	8 10.5	8 05.1	7 24.2	8 05.5	8 29.6	8 26.2	7 54.9	8 04.8	7 04.8	7 45.1	8 35.5
June 19														
20	9 25.3	8 39.9	8 26.5	8 09.3	8 08.0	7 54.2	8 03.5	8 52.8	8 39.1	7 57.9	8 03.4	6 56.9	7 19.3	9 24.3
21	9 51.6	9 16.7	8 14.7	8 04.1	8 13.1	7 55.5	7 48.9	8 08.9	8 04.1	5 38.7	6 40.7	8 05.5	8 04.6	8 47.6
22	7 14.1	9 28.3	8 08.0	7 22.2	6 50.6	7 34.1	7 58.9	7 36.8	7 54.3	8 14.7	9 12.8	8 27.9	8 21.1	8 33.8
July 20	8 30.0	8 12.9	8 16.6	8 01.8	8 27.4	7 25.0	5 51.7	6 44.7	8 57.4	7 05.4	9 15.7	7 45.9	8 39.8	8 30.9
21	8 19.9	7 31.1	8 15.1	8 01.6	7 32.1	7 18.5	8 26.1	8 51.3	8 01.4	9 23.2	7 05.5	7 38.7	7 35.6	8 26.6
22	9 34.0	8 46.1	8 39.0	8 18.0	13 20.0			7 40.1	5 08.0	7 01.3	6 54.2	6 30.3	6 44.4	7 24.9
Aug 20	8 02.3	8 15.7	7 23.6	7 42.5	7 15.4	8 28.5	8 18.1	8 10.3	8 35.1	7 39.7	8 35.1	7 49.2	8 29.3	8 18.7
21	8 24.3	8 05.4	8 07.9	8 30.6	8 09.7	7 59.1	8 20.9	8 14.6	8 42.3	8 32.6	8 57.5	8 51.2	8 48.4	8 43.9
22	9 08.8	9 06.3	7 46.1	6 49.5	6 22.6	6 11.7	6 29.6	7 13.2	7 22.7	7 23.9	7 39.9	7 12.9	7 29.7	8 36.8
Annual mean	8 17.1	8 10.1	7 51.2	7 43.6	7 41.0	7 30.4	7 28.5	7 32.4	7 47.9	7 42.0	7 53.9	7 47.0	7 54.9	8 12.4
n	35	36	36	35	35	34	35	36	36	36	36	36	35	35
m	± 55.7	± 57.2	± 55.0	± 44.5	± 64.8	± 52.3	± 75.5	± 62.3	± 57.0	± 55.7	± 56.8	± 56.1	± 57.3	± 50.6
L's limit	± 83.6	± 85.8	± 82.5	± 66.8	± 97.2	± 78.5	± 113.2	± 93.5	± 85.5	± 83.6	± 85.2	± 84.2	± 85.9	± 75.9
n_1	32	32	33	32	31	30	31	33	32	31	33	32	32	31
Undisturbed mean	8 09.1	8 06.7	7 48.4	7 48.8	7 35.9	7 40.1	7 44.3	7 42.3	7 58.6	7 50.6	8 00.0	7 49.8	8 06.0	8 16.2

Magnetic declination, Fort Conger, Lady Franklin Bay, Grinnell Land—Continued.

[92° west + tabular quantity. Reduction to local mean time = − 4h 58.7m. Magnetometer No. 12.]

Göttingen hours.										Day of month.	Remarks.
15	16	17	18	19	20	21	22	23	24		
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		
									8 00.5	Sept. 16	
8 45.4	8 50.0	8 38.1	8 44.8	8 52.1	8 24.9	7 40.4	7 20.0	6 40.3	7 28.7	17	
7 44.0	7 44.8	7 48.1	7 38.9	7 56.9	7 46.5	7 42.8	8 01.0*	8 19.3	8 05.2	18	Missed value at 22h on account of intensity observations; tabular value interpolated (by observer).
8 07.3	8 10.6	8 14.4	8 21.5	8 21.5	7 51.0	7 55.2	8 06.7	7 53.6		19	
8 48.8	8 35.5	8 34.1	9 00.8	9 03.7	9 03.8	8 44.8	9 18.0	8 14.7	8 23.8	Oct. 20	Broken fiber delayed beginning of observations.
8 40.8	8 52.9	8 43.2	9 35.3	9 40.2	8 43.2	9 54.7	8 46.3	8 39.1	8 47.0	21	
9 45.2	8 57.8	9 38.4	9 14.5	9 16.4	8 52.9	9 07.6	9 03.9	8 45.6	8 47.1	22	
										23	
									7 53.1	Nov. 19	
7 50.3	8 03.6	8 08.9	8 27.3	7 59.8	8 04.3	8 01 [illegible]	7 44.2	7 49.5	7 55.6	20	
8 00.6	7 35.9	7 34.6	8 19.4	8 29.1	12 44.9	12 4[illegible]	12 [illegible]7	13 41.0	13 40.4	21	
9 57.9	9 35.8	9 32.5	9 29.9	9 28.5	9 08.7	9 30.[illegible]	[illegible].5	9 15.8		22	
									6 55.0	Dec. 19	
4 34.1	5 22.3	4 48.1	4 24.8	6 32.3	4 57.5	4 [illegible].0	4 [illegible].5	3 52.3	7 22.7	20	Missed value at noon, cause uncertain; value interpolated (by observer).
7 18.8	7 09.3	7 39.8	7 30.6	7 45.1	6 40.2	6 48.[illegible]	6 30.7	6 33.0	7 39.0	21	
7 32.5	7 49.0	7 56.0	7 58.2	7 27.5	7 25.6	[illegible].2	7 20.7	7 19.9		22	
										1882.	
									8 52.5	Jan. 19	
8 04.9	8 40.1	8 45.0	8 59.7	7 44.9	8 23.3	8 19.0	8 15.8	8 30.6		20	
7 44.0	7 51.6	6 39.8	7 16.3	7 41.1	5 20.5	6 04.0	5 35.5	5 25.4)	8 28.9	21	Breaks caused by broken fiber. Observations between parenthesis (10h to 24h) affected by torsion, not included in means.
8 04.5	8 02.1	7 30.2	9 38.3	8 37.2	7 49.[illegible]	7 48.5	8 23.7	7 28.8	6 49.5	22	
										23	
									7 53.8	Feb. 20	
8 26.4	8 09.3	8 03.7	8 31.7	7 57.5	8 10.7	7 55.2	8 10.3	8 20.9	8 24.8	21	
9 37.4	8 43.3	9 15.8	9 08.8	8 36.0	9 27.4	10 05.2	9 32.2	8 30.7	8 36.0	22	
9 02.0	9 02.9	9 19.2	8 15.8	8 29.0	8 42.3	8 52.5	8 27.0	8 16.9		23	
									(5 04.7	Mar. 15	Same remark as above affecting observations 0h to 7h.
8 39.4	8 55.2	9 19.4	9 54.4	10 09.3	8 23.0*	7 57.2	7 46.4	7 31.9	8 08.0	16	Observation marked * made 13 minutes late.
8 51.4	8 55.9	8 35.4	8 29.4	8 33.6	9 09.6	9 09.4	8 07.9	8 19.6	8 10.0	17	
8 42.6	8 19.1	8 50.5	8 20.5	8 21.7	8 08.7	8 53.5	8 04.1	8 07.6		18	
									9 11.7	Apr. 19	
11 58.2	9 13.4	12 39.7	13 55.5	12 29.3	12 53.0	14 40.5	10 08.8	10 36.3	11 04.6	20	
6 50.7	9 30.0	9 39.0	10 33.2	10 16.3	10 36.0	11 15.9	10 05.5	10 02.7	9 47.8	21	
8 14.0	9 02.8	8 30.7	8 53.7	8 55.6	9 29.9	9 09.7	9 24.7	8 23.4		22	
									8 37.9	May 18	
8 19.8	8 16.5	9 54.1	9 33.3	10 40.6	8 48.0	10 32.2	8 32.7	8 09.3	8 09.7	19	
7 41.3	9 23.0	9 42.9	9 23.5	10 43.1	10 24.8	9 58.3*	7 41.5	7 20.7	8 06.5	20	Observation marked * made 8 minutes late.
8 25.2	9 04.0	8 38.4	9 12.2	9 35.4	9 14.0	10 32.1	9 20.2	10 48.0		21	
									8 51.9	June 19	
8 57.1	9 54.7	10 12.3	10 47.5	9 51.6	9 53.9	8 55.9	10 58.6	11 06.0	9 11.1	20	
8 22.5	9 44.5	10 29.0	10 16.2	10 06.1	9 39.4	9 45.3	9 58.0	9 31.8	8 26.2	21	
9 11.2	8 47.9	10 18.9	9 37.3	10 16.4	10 28.3	10 47.0	8 53.9	8 37.0		22	Axis of magnet 22.2 divisions, by observation.
8 48.9	9 21.3	9 08.8	9 17.0	9 17.6	8 51.6	10 22.9	8 58.4	8 54.3	9 04.5	July 20	
9 03.4	9 03.1	10 45.8	8 27.4	9 58.5	8 40.0	9 23.8	8 16.8	9 15.7	9 00.2	21	Interpolated reading of axis 20.9 divisions.
7 15.0	7 15.0	8 11.4	7 32.1	8 15.2	8 26.8	7 50.0	7 08.8	7 07.1	7 58.2	22	
8 27.4	8 40.2	8 50.5	8 43.2	8 37.1	9 28.7	8 59.5	8 54.4	7 53.1	8 32.2	Aug. 20	
8 51.8	8 44.2	8 42.4	9 04.9	9 12.4	10 32.5	9 58.2	8 26.1	9 02.1	11 47.8	21	Interpolated reading of axis 21.7 divisions.
8 18.2	8 50.1	8 59.8	9 08.9	9 01.1	9 13.8	8 14.9	9 48.6	9 04.6	9 38.0	22	
										Mean.	
8 26.3	8 35.0	8 54.3	8 59.2	9 02.8	8 59.4	9 07.3	8 37.3	8 30.9	8 40.8	8° 13′.6	
35	35	35	35	35	35	35	35	35	35		
± 55.7	± 48.2	± 67.3	± 65.9	± 64.7	± 76.9	± 95.4	± 74.7	± 78.9	± 64.9		
± 83.5	± 72.3	±100.9	± 98.8	± 97.1	±115.3	±143.1	±112.1	±118.3	± 97.3	1 33.3	
31	31	32	32	31	31	32	31	30	30		
8 27.0	8 44.0	8 51.4	8 55.1	8 54.6	8 56.9	8 58.2	8 37.6	8 16.0	8 27.1	8 14.4	

The annual means for each hour of the day given at the close of the preceding table include the disturbances; they give for the resulting declination for the year ending August, 1882, the value 100° 13.6′ west (259° 46.4′ east). The line marked n contains the number of observations at each hour, and the line marked m the mean deviation (or mean error) of these individual values from the hourly mean. It was introduced for the purpose of applying Lloyd's rule of separating disturbed from undisturbed values. It is readily obtained, without the labor of squaring the separate values, by the expression

$$m = \frac{1.253}{\sqrt{n^2 - n}}[v$$

where $[v$ is the sum of the differences without regard to sign. In the present application this nearly equals $\frac{1.253}{n - 0.5}[v$.

Lloyd's limit, $1\frac{1}{2}\,m$, is next given; its average value for all hours is ± 1° 33′. This limit throws out 90 observations, leaving n_1 undisturbed values, whence the resulting new means which constitute the regular solar diurnal variation. With the larger disturbances thus thrown out, the declination becomes 100° 14.4′ west (259° 45.6′ east), differing but 0.8′ from the first or general value. The whole number of observations is 846; hence the above limit would mark out as a disturbed value 1 in every 9.4 .

In the following table we present the diurnal variation during the year ending August, 1882,* including all observed values of the declination, as well as after exclusion of the larger disturbances.

Solar diurnal variation of the magnetic declination at Fort Conger, for the year ending August, 1882.

[A plus sign indicates deflection of the north end of the magnet to the east; a minus sign the contrary direction.]

Mean time, Göttingen.	Local mean time, Fort Conger.	Solar diurnal variation—		Mean time, Göttingen.	Local mean time, Fort Conger.	Solar diurnal variation—	
		From all observations.	Large disturbances omitted.			From all observations.	Large disturbances omitted.
Hours.	*h. m.*	′	′	*Hours.*	*h. m.*	′	′
1	20 01.2	− 3.5	+ 5.3	13	8 01.2	+18.7	+ 8.4
2	21 01.2	+ 3.5	+ 7.7	14	9 01.2	+ 1.2	− 1.8
3	22 01.2	+22.4	+26.0	15	10 01.2	−12.7	−12.6
4	23 01.2	+30.0	+25.6	16	11 01.2	−21.4	−29.6
5	0 01.2	+32.6	+38.5	17	Noon +01.2	−40.7	−37.0
6	1 01.2	+43.2	+34.3	18	13 01.2	−45.6	−40.7
7	2 01.2	+45.1	+30.1	19	14 01.2	−49.2	−40.2
8	3 01.2	+41.2	+32.1	20	15 01.2	−45.8	−42.5
9	4 01.2	+25.7	+15.8	21	16 01.2	−53.7	−43.8
10	5 01.2	+31.6	+23.8	22	17 01.2	−23.7	−23.2
11	6 01.2	+19.7	+14.4	23	18 01.2	−17.3	− 1.6
Noon.	7 01.2	+26.6	+24.6	Midnight.	19 01.2	−27.2	−12.7

These numbers are laid down in the accompanying diagram, and it will be noticed that the exclusion of the larger disturbances had but little effect on the character of the curve beyond slightly decreasing the diurnal range.

On the yearly average the extreme *west* deflection was reached between 3^h and 4^h p. m. (local time); amount, about 45′; and the extreme *east* deflection was reached between 0^h and 2^h a. m. (local time); amount, about 40′; hence the whole diurnal range reached about 1° 25′. The average declination of the day was attained at 9 a. m. and at 8 p. m. Comparing these results with those derived from the observations of the British expedition under Captain Nares,† it would seem that the hour of westerly extreme is subject to considerable fluctuation during the year, being much earlier (before noon) in the winter half of the year. The time of the easterly extreme is also subject to great fluctuations, pointing to midnight as the average time during the colder half of the year. At Discovery Bay, in 1875–'76, the mean daily range (October to March) was 1° 28′, or about the same as found in 1881–'82. The extreme declinations observed were: Greatest west declination, 105° 55.5′, on April 20, 1882, at 1^h p. m. (Fort Conger time), and least west declination 94° 49.8′, on the same day, at 3^h a. m. (Fort Conger time); extreme range, 11° 5.7′.

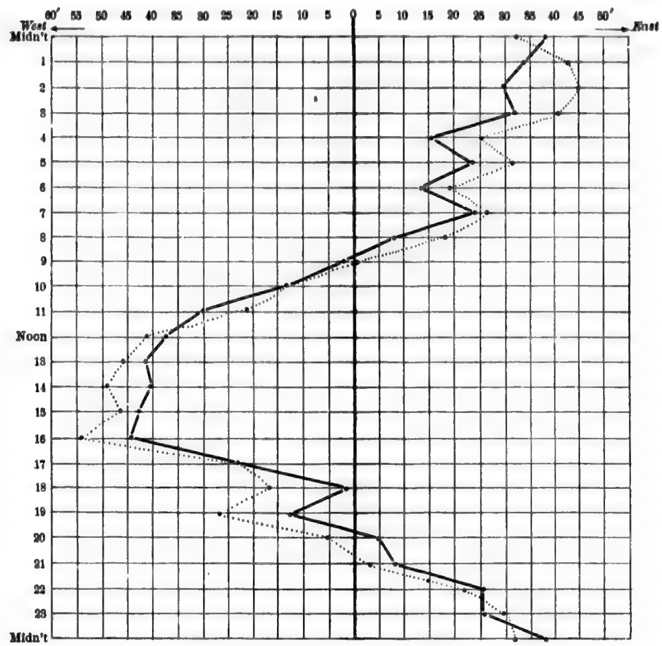
The average declination from absolute and differential measures during the six months, October, 1875, to March, 1876, at the winter quarters observatory, was 101° 47.5′ west, and the average value during the first year's occupation of Fort Conger, September, 1881, to September, 1882, was 100° 13.6′ west; hence the apparent annual decrease of west declination (or increase of east declination) is 14.7′ .

It would not be advantageous to pursue the discussion of the first year's observations any further in view of the fact that the second year's work affords a far richer material for this purpose.

* At this time the range of this variation was probably near its fullest development, since, according to Herr R. Wolf, the maximum sun-spot activity took place in November, 1883, and, according to Signor P. Tachini, in February, 1884 (Nature, No. 870).

† "On the Results of the Magnetical Observations made by the Officers of the Arctic Expedition, 1875–'76." By Staff-Commander E. W. Creak, R. N.—Proceedings of the Royal Society, No. 196, 1879.

Diurnal Variation of the Magnetic Declination at Fort Conger, Grinnell Land, from Sept., 1881, to Sept., 1882.



diurnal variation, using all values.
" " after exclusion of the larger disturbances.

SERIES OF HOURLY DECLINATIONS AT FORT CONGER BETWEEN JULY 1, 1882, AND AUGUST 1, 1883.

This series comprises, or includes, the interval during which corresponding observations were to be collated at the several international polar stations, and it has therefore been put in the shape desired by the Commission. The table gives for every hour the number of minutes (of arc) to be added to 246° in order to obtain the *east* declination observed at that hour. In the conversion of the differential readings into absolute measure no notice was taken of the two preceding and the two following readings about each hour; but the reading *at* the exact hour was adopted as the only one fit for absolute comparison. The readings 2 and 1 minutes before and after the full hour, however, serve to indicate the character of the motion of the north end of the needle at that time, and the signs adopted for this feature have been added to the table.

The conversion of scale readings into values of *east* declination was affected by the expression

$$D = 135° \ 15.7' + c - m + 2.737' \ (s - a).$$

The tabular results, expressed in minutes, give the excess of the observed east declination over 246°, and are found by

$$D_t = 249° \ 15.7' + c - m + 2.737' \ (s - a).$$

The tabular values being all positive no sign is attached to them; the tenths of minutes have no real value, but were carried in the computation to secure the nearest whole minute, as near as may be.

This laborious work, of converting into absolute measure, has been performed by Mr. Alexander Ziwet, of the Computing Division, and was revised by other occasional aid.* The same remark applies to the term-day and the term-hour observations, and the additional disturbance observations during extraordinary auroral displays.

No special record was made respecting the character of the motion of the needle about the time of observation, and it was generally found unsatisfactory to give an interpretation to the five observations symmetrically grouped about the full hour. In cases where the motion consisted of a regular progression, either increasing or decreasing, as well as in the case of a stationary condition, the fact could be readily indicated, and this was accordingly done by affixing the signs ↑, ↓ or = to these tabular values. The absence of a sign will thus indicate more or less irregular motion.

*For the greater part by Mr. J. B. Boutelle.

Magnetic declination, Fort Conger, July, 1882.

246° east, + minutes of table. $\phi = + 81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	831.4	820.5	853.1	874.6	910.1	914.6	928.6	904.1	931.7	873.1	953.5	953.1	944.0	926.6
2	903.4‡	927.9	948.9	904.1	928.7	952.7[2]	935.7‡	945.4	934.7[2]	950.2	911.6	958.3	921.0	971.1‡
3	[1]833.5	843.9	842.7	813.1	797.8	771.2†	764.1	847.3	809.1	772.2‡	784.4	826.7	835.4[2]	822.5
4	826.2†	844.3	857.7‡	865.3‡	840.2	855.6‡	882.8†	847.7‡	814.4	731.2†	692.0†	812.3‡	871.5	743.9
5	737.3	909.5	830.0	845.2	904.1	866.3	877.7	857.7	876.7	894.5	879.7	898.3	870.6	832.7
6	760.1†	808.9‡	816.9†	903.8‡	843.2†	930.5	887.8‡	837.3	907.4†	826.5†	817.3	824.6†	754.6	790.6
7	814.1	809.0	809.0	805.5	821.2	822.4‡	832.0	828.1	780.7	856.8‡	860.9	891.8	863.6	809.3‡
8	764.7‡	813.5	811.1†	821.6‡	847.2†	852.6	871.1‡	793.5‡	776.4‡	794.8	890.1	824.3	727.8†	758.2
9	859.4	830.0	886.4	856.3	856.6	890.7	883.1	902.5†	874.6	912.7	868.4	884.8	846.5	809.2‡
10	722.1	707.2	819.2	844.2	809.5†	809.2	750.7‡	875.3	863.3	806.3	764.9‡	742.4‡	766.0†	847.2
11	782.0†	822.7	815.3‡	809.3†	837.5	787.1	836.0	844.5†	842.0†	828.9	798.0	803.9	816.8	767.7
12	701.7†	837.1	795.8†	777.8†	839.0	850.1	822.4	800.9‡	837.0†	849.9‡	820.7	880.8	777.2‡	807.0
13	757.9†	781.5	830.7	845.6	884.9	837.3‡	838.1	828.6‡	823.6†	877.1‡	854.9	832.2	794.3	809.9
14	797.0	834.9	800.7†	798.4	814.9	807.2	818.0†	781.4†	803.5	812.2‡	821.5	802.4†	778.0	796.8‡
15	785.2	805.4	818.5	804.4	812.2	810.2	815.7	807.7	793.5	794.9	807.1	827.6	795.8	800.3
16	774.4†	733.5‡	759.1†	815.0†	858.8‡	842.2†	814.3†	903.4	819.7	758.6‡	726.7	838.7‡	891.1	789.4
17	840.8‡	754.0	773.3‡	898.5	879.5	804.4†	929.1†	944.1	902.9	842.3	866.1	903.7	773.7‡	802.0
18	798.5	696.2	[2]859.5	[2]850.3‡	756.2	797.7	844.5	759.7	822.4†	819.6‡	785.2‡	775.4	808.6‡	841.1
19	746.8†	787.9	877.2	851.6†	822.6	911.1	910.1†	880.7‡	807.0	849.5	808.7‡	798.8†	816.1†	812.1
20	783.7‡	811.1†	826.1	823.8‡	858.8	816.0‡	874.8†	969.0	916.7	801.5	894.3‡	761.4	854.0	799.0
21	778.1†	822.9†	846.4	826.1	838.1	868.9†	884.1	811.8‡	787.0	840.7	758.7	898.9	864.0†	864.4
22	775.1‡	747.3‡	795.4	799.6†	822.1	521.8‡	....	....	861.1‡	1013.3	906.5	908.7	930.9	912.6
23	842.8	851.0‡	885.0‡	906.0	844.8	891.1	848.7	914.9	863.4†	854.4†	805.4†	939.8‡	866.7‡	864.7‡
24	802.3‡	762.3	822.1‡	838.9†	804.5†	846.1†	810.3†	813.9	826.1†	835.8	810.0	837.0‡	822.2	818.6
25	812.6†	804.7	869.2	912.8	848.4‡	804.8	847.9	855.0‡	882.8	829.2	880.8	872.1‡	867.7‡	827.2
26	827.9†	813.3	790.5†	804.1†	794.8‡	809.5	821.1	820.8	818.5	823.7	842.0	850.1	808.4	814.3
27	786.6	792.2	814.0†	797.3	813.5	827.9	825.7	802.5‡	839.7	834.5	841.1	856.2†	841.8	828.3
28	786.1	816.2	797.1	804.7	830.6	833.4	816.2	822.4	810.7	784.6‡	801.3†	800.1	839.6†	836.6‡
29	810.6	807.8	808.5	830.0†	802.1	852.5†	827.9†	820.6	794.7	803.0	807.5‡	848.0	836.8‡	831.6‡
30	803.2†	803.8	809.3	799.1‡	834.3†	857.9†	890.6	888.3‡	899.6	857.1	770.3†	780.7	819.1†	802.7†
31	863.8	912.7‡	1040.7	833.5‡	793.8†	848.4†	889.4	909.8‡	875.3	1020.4	965.5	812.0	638.8	603.0
Mean	797.1	810.1	836.0	837.4	837.1	835.2	852.6	854.0	845.0	843.5	832.1	846.6	827.2	817.4

[1] At $23^{h}\ 58^{m}$.

[2] Doubtful.

Magnetic declination, Fort Conger, July, 1882—Continued.

λ = −64° 43′ 50″ = −4h 18m 55.3s from Greenwich (or 4h 58m 41.5s west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
925.0	903.2	878.6	876.9	879.4	865.7	853.6	890.6	912.0	926.3	897.1	953.5	820.5	133.0	21.8	1
921.9↓	928.9	864.7	844.0z	748.6↓	819.5†	804.0↓	890.1†	941.7	938.6↓	908.2	971.1	748.6	222.5	21.8	2
796.2†	800.3	799.7	793.2↓	801.4	875.0↓	853.7	884.1	814.2↓	856.0	818.2	884.1	764.1	220.0	21.7	3
788.0	738.1	626.0↓	631.8↓	659.6	800.3↓	790.6↓	738.7↓	821.5↓	826.5	787.8	882.8	626.0	256.8	21.7	4
811.9	738.9	724.9	716.5†	709.1	701.8↓	684.5↓	766.3	764.8↓	846.8	814.4	909.5	684.5	225.0	21.6	5
801.5↓	807.8↓	715.5	772.3↓	729.2z	718.5↓	666.9†	697.8†	715.0↓	694.6	792.9	930.5	666.9	263.6	21.6	6
782.0	746.7	703.6	684.2	604.0	701.7†	761.6	708.3†	772.4	831.1	787.5	891.8	604.0	287.8	21.5	7
700.3↓	721.0↓	730.9	707.4†	748.7	698.0	745.3	683.0	790.0↓	737.7	775.4	890.1	683.0	206.9	21.5	8
791.9	743.2↓	695.3	670.6	685.0↓	700.8	705.2	729.6↓	737.9	726.2	806.1	912.7	670.6	242.1	21.4	9
769.9	704.0↓	688.2	720.3†	740.5	769.6	741.4	766.1†	816.7↓	796.1	776.7	875.3	688.2	187.1	21.4	10
715.4	732.3	774.8↓	768.0	756.0↓	697.3	702.6	760.7	729.3	765.0	783.0	844.5	697.3	147.2	21.3	11
760.9†	735.8	730.4	724.1†	708.0†	701.4	695.6	681.7†	786.8	783.1	779.4	880.8	681.7	199.1	21.3	12
787.7↓	751.3	788.5†	749.4	767.6	748.9	735.5†	695.4↓	704.5†	752.5	794.9	884.9	695.4	189.5	21.3	13
798.5	799.7†	756.0↓	769.2	729.8	716.5	726.1	781.7	781.8†	769.7	787.6	834.9	716.5	118.4	21.2	14
766.3	757.0	743.9	734.0	754.0	747.9	752.1	767.9	772.3	776.5	785.4	827.6	734.0	93.6	21.2	15
850.7	824.5	751.1†	727.4↓	654.7↓	733.9	639.3†	719.0↓	766.2	838.0†	784.6	903.4	639.3	264.1	21.1	16
758.8	749.1	723.0†	736.8↓	673.5↓	718.6	806.0	848.7	742.9†	762.0	809.7	944.1	673.5	270.6	21.1	17
814.0↓	791.7	728.8	710.4	721.4↓	733.6↓	676.3	632.7	631.1	718.0	765.5	859.5	631.1	228.4	21.0	18
817.0	778.0	782.9	791.7†	781.7	794.7↓	768.2	790.8↓	805.9↓	768.2↓	815.0	911.1	746.8	164.3	21.0	19
809.4†	787.0	759.0†	771.0†	763.5	762.6†	788.5	696.7†	779.2	786.1†	812.2	969.0	696.7	272.3	21.0	20
812.9†	776.2↓	776.5	673.2	811.3	720.0	794.2↓	750.8†	824.4↓	767.0↓	808.2	898.9	673.2	225.7	20.9	21
873.4↓	888.4	887.2	838.1	868.5†	823.0↓	813.1↓	848.1	889.4	894.0	846.8	1013.3	521.8	491.5	20.9	22
842.0	827.2↓	845.3	830.2	812.3†	811.0↓	770.3†	754.5	805.4	854.1†	847.1	939.8	754.5	185.3	20.9	23
819.5†	800.6	773.8†	775.6	738.6	------	699.9	730.4	709.6	826.2†	794.7	838.9	699.9	139.0	20.8	24
801.4	800.0↓	786.3↓	770.5↓	756.4	733.5	705.9†	704.0†	751.6†	793.8†	813.3	912.8	704.0	208.8	20.8	25
803.0↓	787.7	765.9	726.6	724.0	719.6	711.5	759.2	736.1	734.8z	787.8	850.1	711.5	138.6	20.7	26
819.0	804.7↓	772.1	770.8	770.3	763.8†	727.4	748.0†	746.5†	738.1	798.4	856.2	727.4	128.8	20.7	27
834.9↓	818.1†	838.5†	830.2	839.9	823.8†	787.3†	806.1	814.9	883.0	819.0	883.0	784.6	98.4	20.6	28
807.2	796.2	799.6	823.9↓	740.4↓	736.7	746.4	715.2†	768.6	783.5†	800.0	852.5	715.2	137.3	20.6	29
790.7↓	775.2↓	767.0	745.2	726.0	626.5↓	680.8	651.4	680.7↓	757.6	784.0	899.6	626.5	273.1	20.5	30
711.6	635.3	754.5↓	652.2	667.2†	663.2	637.8	672.2†	616.6↓	666.1↓	778.5	1040.7	603.0	437.7	20.5	31
802.7	782.2	765.6	752.8	744.2	747.6	741.0	750.6	771.9	793.5	805.1	854.0	741.0	113.0		

Magnetic declination, Fort Conger, August, 1882.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	773.7	799.9	859.6	858.2↓	859.5	891.0	933.6	932.8	909.2	905.1	937.9	865.9	873.4	813.4
2	858.4†	836.9	850.7	808.8	860.9	870.2	847.6	868.5	801.1	791.1	796.8↓	846.3↓	845.9z	752.2
3	809.9†	812.3↓	820.4↓	808.5†	862.8	809.7	835.6↓	812.0	846.3	764.9†	848.0	796.8	788.9	771.2†
4	813.8†	821.1	819.0	824.7↓	822.9†	815.1†	826.7↓	844.7↓	865.4†	927.1†	885.1↓	866.4	817.1↓	725.2↓
5	638.3	805.5	799.8	756.0	915.1↓	949.4	871.7†	839.7	817.1†	858.2	813.3	871.1↓	817.0†	796.7↓
6	806.3	818.9	815.6	779.5	817.0	809.4†	827.9†	833.6↓	783.0†	858.9	851.8	850.4↓	834.4†	760.7
7	771.8↓	808.0	809.4	779.1↓	833.0	865.1	920.7	859.7	872.5	865.0†	920.8	879.6↓	848.7	829.5†
8	839.4†	835.6	824.3	823.9↓	830.2	911.4	863.9	869.1	800.6	824.6	868.6↓	885.2	853.3	838.7
9	803.6	861.9†	825.1†	816.5	860.7	864.1	881.3†	880.9	892.7↓	862.9	849.0	834.5	797.5	796.6†
10	842.7	827.2z	832.0†	832.6	809.6	917.6	919.1	917.6†	904.9↓	879.2†	858.8↓	762.4↓	912.7	811.8↓
11	809.3	807.2	956.6↓	899.4↓	916.0	864.0↓	841.3	827.3	840.3	829.2	827.9	860.5	824.6↓	834.5
12	842.9†	818.3	851.7†	903.6	871.4	885.6†	911.3	890.0	891.0	893.2↓	950,2†	901.4	834.6	684.6†
13	816.4	798.6†	792.9	815.1↓	809.1	842.3	886.7†	834.3	771.7	757.9	855.7	742.4	826.3	883.0
14	804.0↓	795.1†	762.4	807.7†	827.5†	836.8↓	862.0	774.8↓	809.8	840.2	889.2	838.1	865.5	829.3
15	770.9	831.7	881.7	893.3	866.5	869.2	853.5	845.9	830.0	795.3	775.7	797.8	804.6	796.4
16	804.0†	807.0↓	811.3†	803.5	821.1†	869.7	807.0	825.7↓	761.2↓	859.8↓	918.1	772.8†	750.7†	890.7
17	797.3↓	846.5↓	824.6†	869.7↓	838.8†	906.1↓	910.2↓	783.2	790.4	773.4	892.6↓	846.2†	748.1↓	790.5
18	799.8	833.4	882.3	863.4†	892.7†	878.2	857.4	880.1†	859.7	854.1†	829.2	850.0↓	895.5	851.7
19	844.0	860.5†	892.3↓	836.2	887.6↓	873.5	932.4↓	865.7	881.7	872.4	857.0↓	875.0	852.4↓	817.6†
20	833.6↓	835.0↓	824.9↓	874.9†	859.2†	885.8	812.0†	820.8†	830.2↓	800.3	860.1†	799.1	849.8†	811.5
21	797.5†	819.3	831.8	832.5	808.8	831.1	839.7	818.8†	825.2z	798.9	804.3↓	782.1	790.0	792.1↓
22	608.0	771.0†	774.1†	851.4	912.1	936.7↓	948.0	929.5↓	888.5	875.9	875.5†	859.0	889.5↓	870.1↓
23	801.7	795.3↓	836.5	832.9†	821.3	811.1†	815.7†	822.0	830.4↓	834.1↓	793.2	752.8	758.7†	769.9†
24	802.0	822.9↓	813.8	829.5	804.5↓	817.2	797.6	797.9†	831.2†	778.4↓	781.9	792.2	823.6	796.8
25	824.5	796.1†	784.9	812.2	837.5	808.0†	806.8	829.8↓	789.4↓	783.7↓	767.3	775.7	816.0	812.0
26	752.2	789.1	801.5↓	833.2↓	827.1	794.7	817.7	795.3†	796.5	805.0	794.0†	806.2	797.6†	805.0
27	810.5†	805.7↓	807.4	820.6↓	834.7†	823.7	848.7	800.2↓	867.0	855.2	837.1	797.8	844.4	779.5
28	781.5†	866.5	814.3	852.1↓	813.4	804.0	808.3	796.2z	907.8†	836.1	842.1†	779.9†	800.0	824.0†
29	830.7↓	812.2	796.4↓	798.2†	833.4↓	799.6↓	821.8	858.3	862.9	845.8	823.9	832.1	847.8↓	817.1†
30	838.8	859.2†	831.8↓	875.0↓	835.0	821.4†	851.6†	850.0	867.2↓	774.9	773.6↓	824.7	820.4↓	777.6
31	801.5	800.7	821.1†	819.8	822.5†	827.3†	863.7†	806.0↓	883.8↓	841.3	834.0	849.7	858.3	811.7
Mean	797.7	819.3	827.4	832.6	845.5	854.5	858.8	842.3	842.2	833.6	845.6	825.6	828.6	804.6

Magnetic declination, Fort Conger, August, 1882—Continued.

$\lambda = -64^\circ\ 43'\ 50'' = -4^h\ 18^m\ 55.3^s$ from Greenwich (or $4^h\ 58^m\ 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours. 14	15	16	17	18	19	20	21	22	23	Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
694.0	754.9	754.3	689.0	640.8	684.8	678.9	669.6	774.7	819.7	807.2	937.9	640.8	297.1	20.4	1
748.8↓	724.8†	730.8	708.5↓	752.9†	768.4	804.4	768.7	771.2†	809.1†	801.0	870.2	708.5	161.7	20.4	2
769.5↓	792.4	721.5	707.4↓	704.8†	733.4	744.3	757.2	735.1†	814.7	786.1	862.8	704.8	158.0	20.5	3
763.0†	688.4	766.6	479.0	510.4†	599.2	694.1↓	756.1	858.0	768.9†	773.2	927.1	479.0	448.1	20.6	4
784.0	710.9	730.2	545.6	721.9↓	821.5	808.5↓	795.2	828.1	806.6	795.9	949.4	545.6	403.8	20.6	5
817.5↓	810.0	764.0↓	684.5	737.7	721.7†	704.6	685.7	791.1	741.0	787.7	858.9	684.5	174.4	20.7	6
895.1↓	833.5↓	851.5	827.1	719.9↓	718.1	721.8	776.3†	840.4↓	827.6	828.3	920.8	718.1	202.7	20.7	7
800.7	771.6	768.4	752.7↓	746.5	724.0	714.1	636.7	800.0†	792.8	807.3	911.4	636.7	274.7	20.8	8
792.4†	789.3	765.4	705.5	737.4↓	762.7†	802.0	796.9↓	802.6↓	818.8	816.7	892.7	705.5	187.2	20.9	9
787.6↓	715.0	677.2↓	650.6	662.4↓	644.7†	721.5	765.9†	774.9†	722.9†	798.0	919.1	644.7	274.4	21.0	10
796.6	797.5	796.1	791.4↓	783.7	771.7	812.7†	816.9†	828.8	808.6	830.9	956.6	771.7	184.9	21.0	11
781.4†	768.8	735.1↓	732.6†	763.9	794.4	974.5	797.3	751.2↓	819.6	839.5	974.5	684.6	289.9	21.1	12
855.6	850.3↓	824.4↓	697.2	607.1	781.5	812.4		767.1	822.1	800.5	886.7	607.1	279.6	21.2	13
796.8↓	712.0†	725.3↓	743.0	765.5↓	700.9†	661.5†	706.4	781.3†	762.0	787.4	889.2	661.5	227.7	21.2	14
798.9	826.6	741.3	775.7	783.7	742.5	804.8	766.6	794.9	754.6	808.4	893.3	741.3	152.0	21.3	15
821.5↓	793.1†	758.2†	799.4	804.8	685.8†	653.0	683.6†	772.3†	777.1↓	793.8	918.1	653.0	265.1	21.4	16
797.5	719.3	787.2	772.7	764.1	707.4	773.7	775.3†	799.8↓	790.9	804.4	906.1	719.3	186.8	21.5	17
854.1↓	825.2↓	706.6↓	781.1†	804.1	827.1	778.6†	764.2	730.0	760.0†	827.4	895.5	706.6	188.9	21.5	18
798.2	760.4	814.4	787.1	821.7↓	776.5z	743.9	731.9	824.7	808.1	834.0	932.4	731.9	200.5	21.6	19
819.7	812.8†	797.5	790.4	795.2	802.9	752.0↓	779.4	774.4	849.1↓	819.6	874.9	752.0	122.9	21.7	20
795.9	784.8	796.1†	796.8	773.9	767.1	688.2†	721.4†	811.2	776.6	795.2	839.7	688.2	151.5	21.7	21
802.4	825.6	787.6	780.5	770.8†	776.0	766.5	826.1†	726.8	775.0	826.1	948.0	608.0	340.0	21.8	22
792.0	763.7	768.5	775.0	751.0†	725.2†	780.2↓	801.6	783.4↓	775.6†	791.3	836.5	725.2	111.3	21.9	23
758.6	756.1	795.9	760.2↓	779.1	830.1↓	781.2	782.6↓	813.3	804.4	798.0	831.2	756.1	75.1	22.0	24
770.7	781.3↓	787.1†	743.1↓	728.9	706.9↓	660.1†	754.2	756.8†	758.0	778.8	837.5	660.1	177.4	22.0	25
787.9	779.6↓	794.0	775.1	793.7↓	788.7	793.4	798.8↓	800.9	807.4†	797.3	833.2	752.2	81.0	22.1	26
692.7↓	789.5†	752.5†	767.3†	757.6	757.3↓	800.5	826.1	806.1	805.9†	803.7	867.0	692.7	174.3	22.1	27
798.8†	744.6	735.9	733.2↓	736.3	724.7	720.9	738.6	790.9	783.6	793.1	907.8	720.9	186.9	22.2	28
793.3	790.4†	629.9†	595.2†	760.7†	765.6	754.6	834.4†	766.2↓	807.6	794.9	862.9	595.2	267.7	22.3	29
767.3†	768.0	764.5	716.5	739.1	765.6	773.8	758.2↓	793.9↓	804.0↓	802.2	875.0	716.5	158.5	22.3	30
778.8	769.8†	818.0	795.0	780.2	790.0†	781.3	803.2	808.3	796.6↓	815.1	883.8	769.8	114.0	22.4	31
790.7	774.5	762.8	730.9	741.9	747.3	756.8	762.5	789.2	792.5	804.5	858.8	730.9	127.9		

Magnetic declination, Fort Conger, September, 1882.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	810.4	830.4	791.4	816.8	804.1	816.8	828.2	822.2	811.5	796.9	784.5	787.8	779.0	777.0
2	809.8	799.6	792.6‡	793.7‡	794.4	806.0	794.1	780.5†	782.5	855.0	862.3†	869.9†	893.0	858.5
3	810.6	813.0	879.7‡	835.2	809.0†	827.3‡	857.6	870.6	859.7	850.1†	818.6	826.9	813.2	773.2
4	819.0	816.2	787.1	882.5†	835.5	818.4†	826.7	836.4‡	812.5	827.8	781.2	810.1	797.2‡	804.6
5	801.8	815.3‡	831.4	826.4	844.7	797.8	857.1	844.3	875.3	836.5	756.4	863.2	814.7†	739.0†
6	930.2‡	769.1†	814.2	824.7‡	842.9‡	913.0	887.0‡	829.0	807.1†	803.8	810.6‡	847.5	805.0†	816.4
7	816.5	811.8	859.1	840.3	804.3	820.4‡	867.4‡	843.9‡	822.0	824.7	810.8	806.9	817.2	791.9
8	808.8†	820.8†	817.5‡	808.9†	811.4†	816.8‡	852.0‡	869.5	814.0†	855.3‡	846.1	847.8†	794.4‡	797.6
9	779.9†	801.8	801.0†	843.7‡	809.9	856.8	840.2‡	779.8†	865.8	819.5	792.1	825.6‡	855.4	803.7
10	749.7	837.5	812.2	810.2†	830.6	797.7	802.1	810.5‡	795.7	789.3	788.6	786.2	791.9	794.6
11	775.2s	785.8†	812.2‡	829.1	822.2‡	831.6‡	828.5†	818.3	783.2s	798.0	819.2	789.3	800.2†	799.8
12	754.6†	895.7‡	805.4	815.5†	1015.7‡	788.9	794.5	757.2	765.0	786.9‡	781.7‡	797.5	814.1†	794.3‡
13	783.0	805.5	842.4	858.1†	901.6‡	833.2†	788.7	855.1	840.2	832.5	788.4‡	800.7‡	811.0	781.2
14	786.5‡	808.6	821.2†	836.5‡	871.8	809.7	850.2	811.2	804.0†	848.0‡	788.5	802.0†	806.1	774.2†
15	804.1	838.1	807.6	804.0	807.3	846.2	874.8	826.7	846.0	856.3	816.9	809.0	814.6	791.9
16	808.6	806.4	810.6	816.9	810.5‡	805.7	809.1	801.9‡	790.3‡	794.3†	793.0†	801.3	798.4	805.1
17	791.7	804.8	800.9	814.2	827.0	847.4	854.5	839.6†	832.9‡	802.4	803.6	804.7‡	801.9‡	784.5
18	808.2†	801.0	810.1†	796.0‡	800.3	811.0	798.4†	802.9	821.5‡	794.3	797.3†	793.0	802.7	802.1‡
19	818.3‡	829.3‡	793.7	793.9	786.2	810.0	784.6†	793.1	788.3	808.6‡	799.0†	788.1	793.9s	804.6
20	795.9	794.0s	789.3	825.8†	837.1	795.4	812.5	812.5	788.3	820.1	799.5†	828.9	806.8†	787.9
21	834.0	821.4	845.0†	807.7‡	826.9†	812.4‡	806.0†	811.2†	806.0†	788.6	842.1	771.6	782.9	791.3
22	801.8†	792.0†	799.3	802.9‡	800.4	799.5	797.7	804.2	812.1	798.7†	792.3†	793.7	782.0†	788.9†
23	836.3	827.0†	829.4s	832.8‡	851.0‡	854.7	853.2†	831.0	835.6	821.3†	828.2	826.8	843.8	845.3
24	787.1	783.5	793.1†	798.3‡	803.7	791.2	790.4	799.3	792.2	784.7	788.7	787.1‡	778.5‡	772.1†
25	807.3‡	808.8	835.9	808.5	824.7	844.6†	808.9	808.9‡	790.5	781.2‡	763.6	816.2†	785.1†	755.9†
26	816.6	815.3	810.4‡	801.8	844.6	832.5	854.9	810.7‡	847.0	815.3†	840.6†	799.2	766.0	773.8
27	778.2	810.1	830.4†	844.6†	883.8	863.9†	864.9†	846.8†	840.5	804.2	784.5	794.2	784.8	738.4
28	783.9†	784.3‡	795.6†	822.2	818.2	802.4	792.5‡	816.1†	807.7	799.2	791.3	777.8†	783.2	793.0
29	797.1‡	817.7	811.7	812.5†	817.1	827.4†	824.3	826.7	819.5	819.1	812.3	815.8	797.1‡	794.5†
30	823.8s	825.9‡	819.6	822.5†	825.7	847.1	842.3	836.9	845.1‡	835.1‡	833.4‡	817.4‡	784.0†	788.9
Mean	804.3	812.4	815.0	820.9	832.1	824.2	828.1	819.9	816.7	814.9	803.8	809.5	803.3	790.8

Magnetic declination, Fort Conger, September, 1882—Continued.

$\lambda = -64^\circ\ 43'\ 50'' = -4^h\ 18^m\ 55.3^s$ from Greenwich (or $4^h\ 58^m\ 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours. 14	15	16	17	18	19	20	21	22	23	Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
781.0	774.1	777.8	786.5	794.4	809.0	801.0	822.1	806.5	794.9	800.2	830.4	774.1	56.3	22.5	1
825.5‡	843.7	828.7	807.0‡	780.5‡	634.7	727.0†	758.3‡	766.7‡	825.3	803.7	893.0	634.7	258.3	22.6	2
772.1	698.9	703.9	683.3	705.0	752.0	680.2‡	693.1	782.1‡	829.8†	789.4	879.7	680.2	199.5	22.5	3
770.9	764.6	760.1	729.5	759.0	770.1†	763.1†	768.1	803.0	757.5	795.9	882.5	729.5	153.0	22.5	4
697.2†	692.8†	745.8†	698.3	628.9†	628.6	684.9	683.1	730.3†	808.6‡	770.9	875.3	628.6	246.7	22.4	5
834.8	795.5‡	780.6	733.6	720.6†	743.5	769.0	763.0	837.2	858.6	814.0	930.2	720.6	209.6	22.3	6
780.4	772.0	767.8	763.3	791.3‡	789.9†	764.7†	761.7†	770.5	790.9†	803.7	867.4	761.7	105.7	22.3	7
790.0	789.1	782.4‡	775.4	759.5	766.1	792.4†	780.8†	786.3†	797.7	807.5	869.5	759.5	110.0	22.2	8
791.7	760.8‡	797.2†	814.4	780.3‡	754.5	829.0†	732.2	720.8	776.5	801.4	865.8	720.8	145.0	22.2	9
795.1	757.7	774.5	759.6†	749.3	752.1†	782.3	791.0	806.6‡	791.3†	789.8	837.5	749.3	88.2	22.1	10
818.8	795.5†	772.8†	756.8	814.8	696.3	647.4†	722.5	736.8	777.2†	784.6	831.6	647.4	184.2	22.0	11
814.4	775.0†	815.6	784.9‡	742.0‡	747.6†	782.0	789.5	777.8	809.9	800.2	1015.7	742.0	273.7	22.0	12
798.2	774.8‡	696.5	774.6†	677.4	707.6	755.2	737.4†	770.8	800.0†	792.3	901.6	677.4	224.2	21.9	13
760.9	759.5	714.9	699.3	793.7†	794.7	770.7‡	687.2‡	774.2	795.3†	790.4	871.8	687.2	184.6	21.8	14
776.5	773.5	779.2	802.2	817.7	776.0	828.1	788.0	769.3	802.2	810.7	874.8	769.3	105.5	21.8	15
799.8‡	798.9†	781.3	792.5	800.0‡	801.3	789.1‡	803.9†	741.6	791.4†	798.0	816.9	741.6	75.3	21.7	16
792.6	783.2	803.9	763.5‡	760.2	760.3‡	801.2	808.5	780.4	769.8	801.4	854.5	760.2	94.3	22.0	17
808.7	785.1	781.0†	751.8†	741.2	745.4	726.7‡	699.9†	771.2‡	810.2‡	785.8	821.5	699.9	121.6	22.4	18
820.9	779.1	795.7	743.4	759.0	771.9	715.2	778.3	785.3†	826.0	790.3	829.3	715.2	114.1	22.7	19
787.5	780.2‡	781.5	792.9	810.3†	793.6†	750.2	747.3	785.8†	768.0‡	795.5	837.1	747.3	89.8	23.1	20
808.6	780.9	773.9	791.7	760.9	792.6	782.3†	790.7‡	777.2‡	804.8†	800.4	845.0	760.9	84.1	23.4	21
777.9	774.2	790.3	784.0	770.1	764.7	749.4	777.6	794.7	787.5‡	789.0	812.1	749.4	62.7	23.7	22
808.7	790.6†	744.7	789.4	728.6†	756.4‡	744.4	779.9	796.6	798.7	810.6	854.7	728.6	126.1	24.1	23
765.0†	768.3‡	763.8	770.5z	785.0	776.9†	783.8z	770.9‡	769.2†	788.7†	783.0	803.7	763.8	39.9	24.4	24
741.4	661.0‡	702.3	658.2†	728.2†	737.7	743.2‡	685.4‡	733.4	778.6	767.1	844.6	658.2	186.4	24.8	25
794.2	797.7	800.9‡	788.1†	787.6	787.4†	816.5	722.8‡	752.6‡	798.0‡	803.1	854.9	722.8	132.1	25.1	26
798.6†	761.8†	769.2†	777.1‡	(802.3*)	756.5	758.6‡	767.7†	741.8z	777.0	799.2	883.8	738.4	145.4	25.4	27
761.6‡	761.8‡	748.6z	752.5	744.8	743.0	745.0†	[illegible]8.2	771.3	762.4†	780.7	822.2	743.0	79.2	25.8	28
772.6	798.3‡	770.3‡	740.0	759.4†	772.0	782.8†	780.3†	797.6†	795.0	798.4	827.4	740.0	87.4	26.1	29
771.3	767.3	768.0†	778.1†	792.5‡	783.7†	790.7‡	801.4†	824.7	777.7	808.5	847.1	767.3	79.8	26.4	30
787.2	770.5	769.1	761.4	760.1	755.5	761.9	759.0	775.4	795.0	795.5	832.1	755.5	76.6		

* [illegible]^h 10^m; at 18^h off scale.

Magnetic declination, Fort Conger, October, 1882.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	730.7	724.0	722.5	733.1	729.8	738.9	750.1	739.3	724.3	728.0	743.0	728.6	715.8	720.9
2	817.2‡	819.8†	833.0	836.7†	827.9†	828.7	854.9†	868.2	842.7	825.9†	838.8‡	962.3‡	876.7‡	1070.8‡
3	760.8	788.0	819.3‡	778.7	798.1	782.9‡	737.7	741.4	718.6	707.6	801.2	857.8‡	835.5	849.2
4	828.4‡	809.2	802.6‡	805.8	864.5	811.2	904.6‡	830.2	844.8	858.9	860.3‡	851.4‡	740.5†	823.6‡
5	796.1†	804.4‡	847.5	817.2†	827.0	854.0‡	867.7	871.7†	892.9	874.0‡	832.8	804.9‡	818.9	822.2
6	840.2‡	851.2†	872.8	927.5	862.8	910.2‡	858.9†	829.0†	833.1	974.3	819.7	793.7†	740.1†	774.1
7	1062.3†	1059.7‡	1057.9‡	1056.5	1058.8	1058.5	1060.0‡	1048.3	1053.4†	1046.6	1037.8‡	1056.2†	1080.7†	1066.5
8	801.3	788.6†	827.5‡	816.8‡	815.9†	815.5†	816.6†	802.3‡	807.1†	811.2	807.4	799.8	802.5†	799.6
9	815.6	778.8†	815.6‡	816.6	826.9‡	801.8†	807.1	809.3§	815.1	804.8	806.5‡	812.7	817.4‡	806.0†
10	718.8‡	719.1‡	732.8†	708.0‡	704.7†	713.8‡	733.7	731.2	711.8‡	710.5	693.1	716.1	679.4	713.3‡
11	782.4	787.4	771.3	853.1†	812.1‡	791.9	795.1†	773.7†	765.8	788.2	783.3‡	775.1	785.4	735.2‡
12	821.7	814.9†	800.4†	842.6	819.6‡	847.4†	836.6‡	795.1	785.3†	769.4‡	816.4	781.9†	791.2	783.0‡
13	761.8†	789.7‡	795.7†	795.6‡	777.4	773.1	764.1	771.3‡	804.8†	774.4†	770.3‡	781.5	766.5†	766.5†
14	759.7	790.5	795.5	793.3	773.8	780.6	769.9‡	758.9	769.7†	780.9	783.5†	784.4†	765.8	738.7†
15	800.3	803.1	811.0	806.0	853.0	833.6	778.4	836.3	836.2	837.2	806.5	762.7	736.8	731.8
16	792.9‡	796.3	795.2†	807.4	791.9‡	795.8	782.5†	794.2	793.5	827.0‡	818.8†	829.5†	813.8‡	812.4†
17	747.0‡	824.3†	810.7	781.8†	834.4†	880.4‡	811.9†	814.6	824.1	810.9	783.2	782.0	786.3	769.3
18	841.2‡	830.2	864.0	801.9‡	801.3	811.8	825.3†	810.8	822.7	821.5	812.4‡	829.7	894.1	880.6
19	795.9	786.9†	795.9	797.4	794.7	797.1†	805.9†	806.1	796.3	791.4†	794.0†	796.1	784.0	785.8§
20	798.3†	797.4†	794.9	796.9	799.4§	793.3†	802.1†	794.0‡	793.2	794.6	791.3	791.1	785.3†	786.7
21	793.6‡	797.0‡	797.6‡	799.0	794.2§	798.4§	791.5	798.0†	797.2	793.0†	792.5	789.1§	785.7	781.9
22	794.2	796.4	825.0‡	801.7	789.4	815.3‡	815.2	834.7	840.3	800.6	807.3	770.8	780.7‡	760.8§
23	803.6‡	844.9	818.5†	818.9	849.8†	851.9	856.4†	832.3	813.5‡	828.3	804.9	772.5‡	809.0	796.2
24	791.0‡	802.7	795.5	800.3†	834.8†	855.7	891.4†	903.4†	857.2	824.5‡	819.4	791.4‡	766.6‡	719.7
25	797.3†	778.2‡	790.3	792.8	765.2	855.9†	891.0†	983.5‡	892.3‡	801.4	804.8	760.2	786.6‡	783.7‡
26	789.0‡	800.8‡	817.0†	851.7	854.4	824.0	828.7†	830.9	814.8†	790.2‡	789.3‡	790.4‡	802.4‡	782.1
27	771.1	802.3	817.0‡	812.9‡	816.8†	816.0‡	829.7‡	854.9†	852.8	830.5‡	806.2‡	787.3	772.3	774.7
28	811.6	823.7†	917.4	786.9‡	876.0	881.2	879.7	867.1	866.7‡	772.2†	780.6‡	785.8	772.7	761.4‡
29	830.1	839.9‡	879.6‡	825.7	861.8†	871.6	876.9‡	855.2	816.7‡	814.4	848.2†	817.0†	803.0	817.1
30	806.0	853.2‡	794.9‡	829.1‡	846.9‡	802.7†	826.7‡	815.5	806.1	818.3	789.0	808.4	789.1†	697.1
31	801.3	796.1	814.9	847.9‡	833.2†	800.2	794.2‡	792.7†	791.2	800.3‡	802.1‡	794.3†	787.5†	734.8
Mean	802.0	809,6	820.4	817.4	822.5	825.6	827.2	825.6	818.8	813.3	807.9	805.3	795.9	795.0

Magnetic declination, Fort Conger, October, 1882—Continued.

$\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ from Greenwich (or $4^h 58^m 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
710.8	714.3	778.6	797.7	813.0	806.6	814.9	824.6	829.1	828.2	756.1	829.1	710.8	118.3	26.8	1
630.8†	666.7†	694.2⸸	619.8†	471.2	524.2⸸	[1]687.7	672.2†	868.8	737.8†	778.2	1070.8	471.2	599.6	27.1	2
824.2	812.3†	742.6⸸	780.9	857.2	823.9⸸	817.0†	823.2⸸	772.8	824.1⸸	794.0	857.8	707.6	150.2	27.5	3
799.5	766.1⸸	782.7	733.0	738.9†	759.3	781.6†	714.9	770.5	826.5⸸	804.5	904.6	714.9	189.7	27.8	4
782.3	796.5†	764.4⸸	739.5	766.5	702.7	630.8⸸	613.0	820.4⸸	839.9†	799.5	892.9	613.0	279.9	28.2	5
512.2⸸	694.8	682.4⸸	732.9⸸	790.3	828.0	850.3†	848.8⸸	843.4⸸	825.8	812.4	974.3	512.2	462.1	28.5	6
1067.8	1084.3†	1068.1†	1024.3⸸	813.1†	782.5⸸	816.7†	760.0†	799.0	785.6	991.9	1084.3	760.0	324.3	28.8	7
803.0	801.5⸸	797.5	794.7†	806.6⸸	818.1	759.7†	740.4⸸	814.1⸸	807.1	802.3	827.5	740.4	87.1	29.2	8
810.5	808.9	811.0⸸	811.6	791.8	785.5	689.9	696.1	723.0	750.6	792.2	826.9	689.9	137.0	29.5	9
712.6	664.8†	646.9†	699.1†	710.0⸸	708.5†	475.8†	754.8	786.5	828.4	707.2	828.4	475.8	352.6	29.8	10
753.6†	719.4⸸	717.4†	784.5	749.9	[illegible]	574.2	735.3	838.3⸸	831.5	769.5	853.1	662.9	190.2	30.2	11
792.8	740.1†	774.0	767.0⸸	764.7†	741.6†	768.3	756.5†	783.0⸸	771.9⸸	790.2	847.4	740.1	107.3	30.5	12
759.6	748.4	766.5⸸	742.9⸸	779.5†	775.4⸸	790.1	786.8†	785.8†	775.8†	775.1	804.8	742.9	61.9	30.9	13
734.1	755.1	754.6⸸	790.6	651.9	726.1	737.6⸸	772.0	787.7⸸	763.9†	763.3	795.5	651.9	143.6	31.2	14
741.5	717.6	702.7	718.4	761.6	787.2	794.6	785.0	801.5	773.8	784.0	853.0	702.7	150.3	31.5	15
784.6†	803.3	780.3†	767.5	729.2⸸	712.4†	725.9⸸	781.6	734.9⸸	748.9	784.2	829.5	712.4	117.1	31.9	16
793.8	820.3⸸	842.1	837.9	785.6	747.6†	735.7	803.7	795.0	849.4⸸	803.0	880.4	735.7	144.7	32.2	17
865.1	867.5	876.5	874.4⸸	784.1⸸	778.2⸸	780.6	787.1⸸	789.3	797.7⸸	827.0	894.1	778.2	115.9	32.2	18
791.7⸸	775.5[2]	755.1	733.2†	795.9†	796.9	795.9	798.0⸸	808.6	795.4	790.6	808.6	733.2	75.4	32.2	19
781.4	774.7⸸	778.0	777.8	780.8	775.1	782.3	797.2⸸	799.9[2]	795.9⸸	790.1	802.1	774.7	27.4	32.2	20
781.7	777.8	773.1⸸	769.0⸸	775.4⸸	783.4†	792.0	796.2	792.4	800.4	789.6	800.4	769.0	31.4	32.3	21
766.8⸸	755.0	694.6†	691.6	784.5	697.4	740.0⸸	584.7†	740.7	842.1	772.1	842.1	584.7	257.4	32.3	22
741.3	764.9†	752.5⸸	755.0†	772.1	767.7	771.7	780.8	784.1	786.1⸸	799.0	856.4	741.3	115.1	32.3	23
705.3⸸	772.2†	768.4†	734.1	769.4	761.5	760.1	790.4	812.9	801.4	797.1	903.4	705.3	198.1	32.3	24
761.8	758.5	768.6	772.0	746.7⸸	744.2	784.8	770.6	733.5	861.1	799.4	983.5	733.5	250.0	32.4	25
775.6	730.2⸸	716.5	760.1	716.5	763.5	761.2	760.2†	788.7	828.0	790.3	854.4	716.5	137.9	32.4	26
772.9⸸	760.7†	730.5⸸	727.6⸸	748.6	754.4	755.8†	769.4[2]	763.0⸸	805.9	788.9	854.9	727.6	127.3	32.4	27
718.4†	741.3	703.4	729.2†	702.8	727.8	767.0†	734.7	771.9	796.2	790.9	917.4	702.8	214.6	32.4	28
817.4†	789.3†	782.5⸸	722.0	726.2†	795.6	743.8	750.0†	792.3†	783.3†	810.8	879.6	722.0	157.6	32.4	29
741.9	705.4	745.7	708.7	759.0	745.1	807.0	816.5⸸	775.5	798.3	786.9	853.2	697.1	156.1	32.5	30
757.3	753.6	756.2	747.5	763.7	770.0	771.0	773.3	763.1	777.5	784.3	847.9	734.8	113.1	32.5	31
767.5	769.1	764.8	762.7	755.1	753.3	753.7	760.6	789.3	801.2	794.3	827.2	753.3	73.9		

[1] One minute late.

Magnetic declination, Fort Conger, November, 1882.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	763.5	784.9	794.0	732.7	769.0	721.7	734.1	728.6	731.4	721.5	721.5	776.2	785.5	785.0
2	793.2	797.9	814.5	804.5	829.5	805.0	789.7‡	785.7†	783.0†	774.8	770.0‡	780.0	774.7†	780.4‡
3	......	987.5	985.1	990.6	1001.3	975.2‡	1025.5	968.0	984.0	947.7	974.6	965.6	993.1	934.9†
4	833.3	844.2	878.6‡	858.9	865.0	879.0‡	860.3‡	873.9	885.3‡	866.6	872.6	875.5	878.3‡	888.5
5	799.5	796.1	791.7	798.3[2]	800.5†	798.3†	804.3	814.3	821.2‡	807.4	806.8†	803.3‡	808.4	802.5†
6	811.1‡	832.6	825.0	840.8	830.6‡	814.3	814.5‡	825.5‡	805.6	804.1‡	810.1†	807.1	810.1	806.9†
7	885.5	890.1‡	897.8	885.9	890.9‡	917.5	900.9	907.5	926.5‡	930.5†	928.6	921.2†	901.9	921.2
8	873.7	909.4†	887.1	896.3	882.1†	896.5	910.3	928.8	911.8‡	901.7	871.7	879.1	909.2	891.5‡
9	835.2†	937.2‡	861.7†	846.4‡	900.9	862.8	859.0	853.2	866.9†	868.0	851.9	827.1	837.2†	774.6‡
10	873.8‡	854.6†	851.4‡	899.8	865.5‡	872.5†	856.0	864.9‡	865.1	863.9	871.1†	864.4	865.9†	862.6
11	840.3†	822.8[2]	836.1†	822.9‡	841.5‡	830.7[2]	830.1[2]	828.6	825.2‡	829.5	833.2†	847.4	831.0	819.5‡
12	797.3	783.7‡	850.5†	845.8	850.7†	847.9	922.9‡	920.9‡	927.3	953.2‡	852.8‡	826.2‡	824.0‡	736.4
13	884.7‡	904.6‡	928.3†	966.7	950.3	1027.1	971.5†	940.5‡	912.0‡	837.5‡	888.5	871.5	853.5	722.3†
14	902.3‡	921.4†	[1]865.0	925.2†	1053.2	975.9	903.1	900.9	[1]914.9	[1]019.6	962.7	1011.9	880.9	922.4
15	691.5	786.5	773.1	812.8	932.0	1012.5	1082.9	1128.8	915.7	896.3	861.5	773.6	667.4	792.1
16	877.2†	932.0	932.9	884.3	949.2†	861.9	929.2†	830.6	913.3	957.9‡	1079.2	1056.6	884.2	775.8
17	816.0	732.5‡	970.2	887.9	867.9	774.7	713.9†	739.2	765.0†	767.3	795.4	749.3	1236.4	782.8
18	880.5	1098.0	790.7	1093.8†	1186.5	1130.8‡	984.6	968.3	938.8	990.3	914.9	861.6	754.4†	804.1
19	800.0	866.8	874.5	865.4	893.5	865.8	820.5	780.5	813.3	833.6‡	782.9	771.1	785.4‡	786.4
20	784.8	739.5	459.8	777.0	1043.8	1009.9‡	1241.4	1114.2	920.8	800.0	985.2	877.5‡	[2]166.6	807.1
21	665.0	829.6‡	850.[illegible]	880.6	792.7	821.6	819.8†	815.8	827.4‡	802.1‡	785.3	775.1†	774.9	730.4†
22	806.5	721.1	782.7	815.9	790.1	799.1	805.0	843.8	824.1	801.5	792.0	785.9	779.6	769.6
23	777.5‡	768.4	813.8	828.3‡	811.8	797.8	825.1‡	815.5	829.9†	787.2	803.9	773.5	775.2	756.3†
24	798.6†	805.7†	787.4†	776.5	819.4	820.2	821.8‡	818.5	815.6†	800.8	776.7	796.5‡	776.9†	725.7‡
25	777.6	768.8	802.8	805.1	843.8	789.1‡	787.8	799.1	821.4	814.2	780.8	793.7	785.0	757.0‡
26	771.6	853.6	767.6	769.3‡	844.3‡	823.7	763.3	813.9‡	777.1	783.1	778.2	782.1	762.3	766.1
27	797.7	810.0	779.2	789.9	802.7	803.5‡	786.7†	782.3	813.6	819.0	789.2	757.6	781.6‡	786.1
28	783.8	788.8	782.2	790.6	802.2	810.8	841.3‡	824.2	842.9	790.3	819.4†	812.6†	780.7	778.8
29	793.0†	790.3	800.8	788.6	802.8	841.6	807.8	809.1‡	774.0	807.6‡	774.3	781.8	771.6	779.1
30	783.1‡	770.7‡	783.3‡	781.3	785.9†	794.7†	790.0	813.5	803.3‡	840.9‡	793.6‡	793.7‡	770.8	769.9‡
Mean	810.3	834.3	827.3	848.7	876.7	866.1	866.8	863.3	831.9	848.3	844.3	833.3	806.9	800.7

[1] One minute late. [2] One minute early; great disturbance.

Magnetic declination, Fort Conger, November, 1881—Continued.

$\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ from Greenwich (or $4^h 58^m 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
761.8	709.1	701.7	774.5	764.3	722.3	733.8	773.1	782.5	791.7	752.7	794.0	701.7	92.3	32.5	1
775.8⸸	784.6⸸	771.7†	773.1	813.7⸸	804.4	818.7†	818.3	(Suspension broke)		794.7	829.5	770.0	59.5	32.5	2
952.8⸸	927.0†	950.8	925.8	802.3†	816.0	815.4	828.0	834.1	844.7⸸	926.7	1025.5	802.3	223.2	32.5	3
883.6	884.5†	865.3⸸	882.2⸸	777.2	779.9†	788.1	781.2⸸	786.5⸸	798.9	849.5	888.5	777.2	111.3	32.6	4
797.1	800.6†	788.2⸸	802.8	------	795.7⸸	759.3⸸	716.6⸸	732.5†	829.9⸸	791.4	829.9	716.6	113.3	32.6	5
810.7	806.9	791.9	810.5	(Suspension broke.)			880.3†	892.3⸸	923.1	814.8	923.1	791.9	131.2	32.6	6
916.7†	866.6	875.0	848.6	817.7	852.6†	863.6	854.1†	875.8	900.6⸸	890.7	930.5	817.7	112.8	32.6	7
839.0⸸	872.6⸸	855.6⸸	860.0	757.7	771.5	788.3⸸	814.3	808.2	829.2	864.4	928.8	757.7	171.1	32.6	8
807.6†	825.7	815.5†	807.3	772.0	740.0†	817.2†	830.8	867.8⸸	866.9⸸	834.7	900.9	740.0	160.9	32.7	9
836.2	863.3†	853.5⸸	870.3	802.6†	803.9	822.4	823.9⸸	819.5	804.2†	851.3	899.8	802.6	97.2	32.7	10
829.8⸸	833.5†	822.2	819.5†	792.6†	797.8⸸	792.3	790.5⸸	724.1	792.6⸸	818.1	847.4	724.1	123.3	32.7	11
723.1†	762.6	717.2⸸	[1]455.9	760.2	792.9	737.6	824.8	848.7†	893.3	810.7	953.2	455.9	497.3	32.7	12
802.1	672.9⸸	750.6⸸	772.1	699.4	809.4†	826.6	925.3	873.3	831.0	859.4	1027.1	672.9	354.2	32.7	13
909.7	718.8⸸	625.8†	------	755.3†	683.0	503.5	823.7⸸	784.5	878.4	860.7	1053.2	503.5	549.7	32.8	14
841.2	941.0	1036.7	846.4	677.8	790.5	871.7	913.3	1080.7	862.0	874.5	1128.8	667.4	461.4	32.8	15
921.6⸸	880.0	884.4	837.6	821.3⸸	[1]848.6	747.9	853.0	745.0	826.2⸸	885.8	1079.2	745.0	334.2	32.8	16
999.4	731.3	204.6	934.4	612.8	613.6	691.0	796.7	964.2	872.1	792.4	1236.4	204.6	1031.8	32.8	17
801.0†	728.2	729.2	722.0	458.0†	565.8	565.4	848.3	795.5†	666.0	844.9	1186.5	458.0	728.5	32.8	18
1011.2	600.8	707.0	702.2⸸	742.7	679.6	631.4†	827.8†	1036.6	766.7†	801.9	1036.6	600.8	435.8	32.9	19
646.8	669.2	379.0†	702.1	385.5	601.6†	648.1†	633.1	802.9†	815.2⸸	750.5	1241.4	166.6	1074.8	32.9	20
687.8⸸	797.2	705.7	699.6	481.2	603.7	615.7⸸	618.6	826.9	721.6	747.0	880.6	481.2	399.4	32.9	21
767.3⸸	760.9	754.0	751.4	749.0	752.8	758.3	733.9	755.3	760.2†	777.5	843.8	721.1	122.7	32.9	22
705.3	569.9†	718.1	723.9	[2]753.6	719.8	783.5⸸	715.6	770.5†	786.3†	767.1	829.9	569.9	260.0	33.0	23
691.3⸸	740.1	720.6†	711.5	731.8	701.5⸸	705.6⸸	731.0†	699.1†	791.0	765.2	821.8	691.3	130.5	33.0	24
706.5	615.4†	592.1	729.1	616.4	580.5	787.2	748.9	786.4	832.4	755.0	843.8	580.5	263.3	33.0	25
778.6	751.7	670.6	711.6	761.7	742.4	739.0⸸	682.3†	706.3	788.4†	766.2	853.6	670.6	183.0	33.0	26
780.8⸸	761.6	716.2	715.5†	729.5	731.5†	760.5	772.2†	787.2⸸	803.7	777.4	819.0	715.5	103.5	33.0	27
749.1	781.6	776.2	748.2	738.0	734.6†	756.5†	782.2⸸	785.7	771.0	786.3	842.9	734.6	108.3	33.1	28
788.6	759.3	773.2⸸	779.4	778.5	783.6⸸	784.4	775.1⸸	779.0	765.6⸸	787.0	841.6	759.3	82.3	33.1	29
742.8†	684.1†	741.9	768.8	741.5⸸	754.2	774.3	780.0	757.8	765.7	774.4	840.9	684.1	156.8	33.1	30
808.8	770.0	743.2	775.4	717.6	737.0	747.8	789.9	817.5	813.2	812.3	876.7	717.6	159.1		

[1] One minute early. [2] Two minutes late.

Magnetic declination, Fort Conger, December, 1882.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	792.3	791.6	786.8	805.3↓	792.5†	809.7	822.8	818.5↓	802.7↓	805.6†	809.2†	802.0↓	803.7	793.1↓
2	785.1	798.0↓	788.7	789.1	806.8↓	790.6	828.5	792.6†	812.6†	789.9	789.9	814.6↓	821.4	813.2†
3	784.1†	783.2	789.8†	806.7†	776.6†	804.5	798.9↓	822.1↓	768.4↓	800.5	748.7	765.6†	756.7	752.4
4	768.4	757.0↓	769.2	775.0	754.6	761.5	753.6	810.4†	787.4†	789.2↓	816.2†	783.2	722.9↓	735.4†
5	799.1	783.8	798.9↓	793.9†	780.8†	788.1†	784.1	791.0†	798.5	798.1	787.9	784.8↓	775.3	786.5
6	804.1	819.6	823.4	804.8†	803.2	799.4	806.6	807.6	815.9	819.3	821.4↓	811.6	809.2	798.0
7	798.3	804.7	795.4z	804.0	818.6	802.5↓	791.1	788.7	792.1	796.7†	789.8	789.6↓	783.3	790.0
8	811.7↓	824.8↓	819.9	815.4	813.9z	817.0	810.7	811.4	812.2↓	812.6	812.8z	807.9z	809.5↓	797.4†
9	813.6z	808.1	819.1↓	815.5	811.7z	824.9↓	829.6	793.6†	852.2↓	826.9↓	817.2	813.7	812.3	800.0
10	788.4†	819.8	803.0	835.2	831.0	819.6†	818.8†	814.2	819.4↓	822.6	811.1	801.6	800.7↓	811.4
11	818.2	806.0	813.5†	830.6	829.5	859.5	800.3	855.1↓	817.7↓	843.1	822.4	833.4	753.9	819.2↓
12	827.8	836.7↓	796.1†	781.7	801.5	807.2	799.3↓	795.2↓	795.1	791.8†	788.9	791.1	833.1†	801.8†
13	803.9↓	804.3	798.3↓	807.0	811.8	807.1†	820.0	787.3†	808.0↓	797.7	800.5	797.8	785.2	784.2
14	787.2↓	795.7†	803.5z	804.3†	806.2†	793.6↓	798.4	800.8	798.4	792.6	799.3	796.5	794.8†	779.2
15	809.3†	799.0†	802.7	802.8†	798.6	800.3↓	803.1	801.4†	831.5	807.4	803.6†	812.8	807.2	807.5
16	765.5	733.0	610.3†	849.4	826.1↓	844.0	773.9	900.3	859.8	982.6†	919.9	835.7†	893.4	852.9†
17	782.5	805.5	828.2	783.6	792.8	798.7	803.9	772.9†	794.6↓	804.3†	812.7↓	797.2	801.7	803.5
18	787.1↓	797.0†	808.6	835.3	822.0	831.7↓	790.7↓	804.7↓	807.5↓	804.4	801.7	804.9	799.4†	801.7
19	772.9	807.0↓	782.0	835.2	864.4	900.0†	865.8	886.3↓	878.8	876.1↓	860.8†	825.6	808.1	788.5†
20	797.1	806.1	813.1	818.5†	817.9	820.4†	830.0↓	815.3↓	789.5	805.0	803.6	778.6↓	774.9	764.4↓
21	836.9	876.8	819.1†	902.6	916.0	895.3	881.6	877.5†	899.2	846.7	829.7	830.8	810.9†	832.5↓
22	814.4	836.2↓	860.6↓	845.7	824.5	828.1	857.7†	817.1↓	844.6	819.3	841.6↓	789.6	825.4↓	769.2
23	816.9	822.0	840.5†	818.3	818.0↓	854.7	810.6	853.5	799.9	831.6	826.5	805.1	748.6↓	814.7
24	831.4↓	807.5	806.5†	819.9	803.8†	810.9†	804.0	809.6↓	813.6↓	829.9↓	821.4†	792.1†	820.5↓	794.8↓
25	817.5↓	788.7†	814.8	809.7	802.8	842.9†	804.6	833.4	824.9↓	824.9	827.4	813.9	792.2↓	774.9z
26	826.2z	826.5z	834.2†	824.0	824.9z	831.9	833.9	821.9↓	826.2	828.7↓	831.4↓	830.7	826.1↓	827.6
27	805.2	823.6	843.8†	823.6†	839.1†	840.9	868.1	846.1	864.1†	830.2↓	831.6	834.3	828.7†	828.7
28	883.9	922.3↓	915.2†	962.3†	950.5	926.2	907.7	934.6	899.9↓	896.6↓	900.0↓	[1]890.6	900.9	859.9
29	882.7	888.6	913.6	914.4†	915.1	944.4↓	935.1	926.3	941.6	931.2↓	948.2↓	921.8	892.4†	911.9†
30	893.2	879.6	884.4↓	906.5↓	904.3	921.9↓	936.2†	903.3†	900.5↓	911.8↓	915.8†	908.1↓	909.5	887.2†
31	883.9	886.3	892.2	884.1↓	927.8↓	900.3†	902.5†	896.9↓	915.2↓	930.0↓	903.6	896.2	881.3†	798.9†
Mean	812.5	817.4	815.3	829.2	828.8	834.8	828.1	831.9	831.4	833.1	828.9	818.1	812.4	805.8

[1]One minute early.

Magnetic declination, Fort Conger, December, 1882—Continued.

= —64° 43′ 50″ = —4^{h} 18^{m} 55.3^{s} from Greenwich (or 4^{h} 58^{m} 41.5^{s} west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
780.3	755.6†	799.5	810.8†	803.1	770.2	785.0†	783.6	781.1↓	748.0	793.9	822.8	748.0	74.8	33.1	1
808.7	780.5	805.1↓	789.8†	774.0↓	775.0†	766.3↓	766.3↓	779.8	783.9↓	793.8	828.5	766.3	62.2	33.1	2
729.8↓	735.3↓	738.9↓	740.4↓	685.9	702.0	736.4↓	702.2†	762.7†	752.3	760.2	822.1	685.9	136.2	33.2	3
734.1↓	694.4†	660.7↓	691.5	653.3†	778.3	720.8	760.2†	785.5↓	782.1†	751.9	816.2	653.3	162.9	33.2	4
775.1	779.4	810.0†	784.1	800.1†	792.8	791.7	803.7	810.3↓	795.9†	791.4	810.3	775.1	35.2	33.2	5
778.3	786.9↓	790.8	789.1	767.3	783.0	763.3	768.4	799.0†	794.6†	798.5	823.4	763.3	60.1	32.3	6
786.0	765.1↓	781.8↓	761.7	730.0↓	772.4	803.3↓	775.3	778.9	821.9†	788.4	821.9	730.0	91.9	31.5	7
813.8↓	804.5	804.8	804.4	805.1	804.5↓	804.5	807.5	806.2	805.5	809.9	824.8	797.4	27.4	30.7	8
802.2†	789.3†	773.0	775.7	773.5	758.0	797.4↓	801.1	770.9	773.8	801.4	852.2	758.0	94.2	29.9	9
805.7	810.0†	810.2↓	804.8↓	805.7	807.1	812.5	809.8z	815.8↓	809.2†	812.0	835.2	788.4	46.8	29.1	10
820.1†	806.6	809.0↓	777.8	[1]689.5	754.8	721.4	730.6	699.7	758.4†	794.6	859.5	689.5	170.0	28.2	11
784.5	761.3	761.0↓	676.8	728.4	776.2	771.7	794.6	762.1†	796.3†	785.9	836.7	676.8	159.9	27.4	12
784.0z	773.6†	781.6	793.0	738.4	783.1†	772.4	790.1†	790.1z	802.6↓	792.6	820.0	738.4	81.6	26.6	13
790.7†	765.3†	780.8	797.4†	795.8	786.2	792.7†	799.9↓	787.8↓	790.0	793.2	806.2	765.3	40.9	25.7	14
805.8	803.2	796.8	797.2	782.9	784.3	775.0	730.5	685.9↓	731.9†	790.9	831.5	685.9	145.6	24.9	15
890.4	844.0†	800.6	837.9	804.1†	785.9	719.4	698.1	724.2	795.0	814.4	982.6	610.3	372.3	24.9	16
799.6	806.6†	803.2	801.9	793.4	800.8	817.6↓	798.9†	796.7↓	808.7	800.4	828.2	772.9	55.3	24.8	17
803.1z	805.1†	809.0	804.4	797.7†	795.9	792.6↓	792.2	782.2	775.7↓	802.3	835.3	775.7	59.6	24.8	18
795.6	791.6	795.1z	801.8	[2]798.9	[2]780.0	788.4	773.1	777.5	789.8	818.5	900.0	772.9	127.1	24.8	19
745.4	680.5†	706.8	720.9	720.9†	719.5	600.6†	835.0↓	837.3	794.9↓	774.8	837.3	600.6	236.7	24.8	20
755.2↓	754.0	770.3↓	799.3	790.9	820.3↓	871.5	871.9†	807.4	837.4	838.9	916.0	754.0	162.0	24.7	21
720.0↓	783.1	761.0†	787.1†	794.2↓	765.1	803.2	764.7↓	781.5†	817.5↓	806.3	860.6	720.0	140.6	24.7	22
813.3†	805.5↓	761.6	735.6†	794.9†	776.2†	781.4	787.6↓	808.0↓	790.8	804.8	854.7	735.6	119.1	24.7	23
737.8↓	684.4†	748.5	771.9↓	815.3	774.2	805.7	805.2†	802.5†	807 8†	796.6	831.4	684.4	147.0	24.7	24
807.8↓	799.3	754.9↓	770.8†	815.1†	812.4	810.4	810.3	830.4z	822.6	808.6	842.9	754.9	88.0	24.6	25
809.7	788.9	799.5	791.2†	817.6	800.3	790.4†	825.1	810.9	839.0	819.4	839.0	788.9	50.1	24.6	26
829.5†	828.3†	816.2	831.5	915.6†	960.5†	852.4	875.8†	872.0	888.4	849.1	960.5	805.2	155.3	24.6	27
902.4	916.9↓	903.3†	963.9↓	847.2	840.3↓	859.9↓	861.9	859.8	863.1↓	899.0	963.9	840.3	123.6	24.5	28
931.9↓	876.0	923.9†	864.6↓	826.7	804.8†	834.3	845.3†	853.8↓	868.8†	895.7	948.2	804.8	143.4	24.5	29
886.8↓	877.0†	927.8	898.8	812.3†	780.5†	822.0†	853.4↓	873.7	870.5	886.0	936.2	780.5	155.7	24.5	30
886.9†	877.3↓	900.4	886.4	806.9	761.5†	795.7	829.2	877.3↓	920.4†	876.7	930.0	761.5	168.5	24.5	31
803.7	791.3	796.3	795.6	783.4	787.3	785.8	795.2	797.1	807.6	811.3	834.8	783.4	51.4		

[1] One minute late.

[2] One minute early.

Magnetic declination, Fort Conger, January, 1883.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	985.3	1025.2	886.2	935.1	990.9	1011.6	979.3	1000.8	1014.6	1011.3	1028.2	1019.9	1026.2	1045.6
2	1059.8	836.9	848.2	851.5	824.6↓	838.7	833.0	834.5	846.1†	846.1†	835.7	841.1	829.7	839.3
3	825.0	844.8	840.4†	843.9↓	846.1	831.6†	840.8↓	839.4	846.3	856.5↓	846.0	840.2	831.7†	830.0
4	842.7	840.7†	839.6†	839.1	842.6↓	842.3	843.3	848.8	851.6	845.7	841.3	846.5	843.8	821.8
5	852.6†	859.9†	870.4	894.6	890.1	884.9	892.8	898.2	881.4↓	879.3†	856.2↓	843.4↓	846.4↓	857.3†
6	829.3†	849.4↓	924.1	[1]821.2	868.9	861.2s	848.1	860.4↓	872.0↓	881.7†	864.9s	820.6	847.2	817.2↓
7	867.4↓	859.1	868.4↓	851.5	869.6	880.9↓	886.3↓	841.1	816.8s	789.5	791.6	778.6	766.1†	783.1↓
8	880.1†	876.5	874.6†	852.0	894.9	910.9	904.3	901.6	922.3†	906.0†	897.5↓	888.4↓	886.9†	888.0
9	868.8	870.3	867.6↓	885.3	893.1↓	876.6↓	910.5	867.3↓	879.9	883.5†	876.4↓	874.9↓	874.0	868.7
10	825.8	814.6†	813.8	809.9	815.6	821.1↓	822.5	830.6†	825.9	824.7†	820.7	820.5†	815.0†	815.9†
11	794.8	809.0	818.8†	834.3†	826.1↓	841.7	807.1↓	806.2↓	808.7↓	820.2	814.6s	814.2†	809.7↓	806.4†
12	805.5s	802.7†	808.1	809.0	807.9	811.5†	821.0	828.8	814.1	823.8↓	807.6†	818.6	812.8s	807.9↓
13	801.1	807.0†	804.9	807.2↓	806.3	809.5	807.1†	808.3↓	802.9	806.6↓	800.6†	802.8	804.1↓	808.0
14	798.6↓	807.9↓	815.4↓	808.3	808.9†	811.8†	813.4	809.8†	827.8↓	814.3↓	816.8	810.5	801.3†	808.2
15	828.2	853.8	891.3	907.6	911.9	922.4	918.1	919.1	922.0	930.5	935.6	930.1	929.1	920.1
16	959.3↓	951.1↓	955.3	950.4	952.0s	943.6	936.3†	942.9	949.1†	951.5↓	939.5	937.5	936.5	927.2
17	843.9	845.4↓	875.4↓	850.4†	869.5†	859.9†	863.9†	867.1	881.4↓	875.4	877.8†	861.2†	859.9	834.5†
18	843.0	835.2↓	845.3	835.5↓	851.6†	865.5†	895.5†	839.0↓	865.8↓	848.3↓	858.9	865.8	826.4	806.5
19	822.7	815.6	806.2	843.6↓	816.9↓	817.1s	812.6	817.2s	813.0↓	813.5	802.3†	807.1†	798.4	772.2↓
20	815.8	782.1	815.3↓	837.7†	826.5	826.3†	833.4↓	830.2	804.9†	840.2†	837.5↓	888.2	926.5	917.2†
21	807.2	802.1	817.1	822.3	829.2	827.1	824.8	824.8†	825.7†	831.7	829.9	833.7	809.0	785.4
22	817.2↓	802.8†	824.8	811.4	815.6s	820.2↓	818.3†	825.2	809.6↓	805.0	314.9↓	818.7	883.5†	787.9
23	787.6†	805.2↓	806.7	819.2	801.9	804.2↓	821.9↓	803.5↓	813.8	809.3†	804.2	796.6	797.4	789.6
24	810.3s	813.3†	813.3	814.1	816.4†	820.2↓	810.9	818.9†	818.9↓	815.8	813.2†	807.4†	811.0	806.7↓
25	830.5↓	817.4	830.7†	846.2†	803.7	826.5	824.6	835.0	831.8	804.5↓	808.4†	820.5	812.6	785.3
26	824.4†	820.5↓	847.7	826.0	855.9	858.0†	932.7†	789.2↓	821.2	823.3	823.5	777.6	838.9	776.5†
27	832.8	780.0	813.4†	803.5†	841.7↓	848.0	795.9↓	817.5†	805.4†	816.5†	806.2↓	819.1↓	821.1	799.3↓
28	689.0	730.4	699.6	739.9↓	960.0	815.1	835.5	860.4	827.5†	800.1†	797.8†	804.3	795.9↓	790.3
29	819.5†	828.0↓	805.9↓	815.4	846.9	803.7	799.9↓	805.1↓	806.8↓	807.3	800.7	803.4↓	798.2	788.1†
30	794.2†	796.0	797.7	809.1†	812.8†	806.1	799.2s	804.7	801.7↓	811.2	812.5	801.5	791.5	798.1
31	773.8	772.5	781.8↓	768.9	806.7†	795.8†	801.2	806.4↓	823.5	829.3	815.8↓	798.1↓	779.0†	793.8↓
Mean	836.7	830.8	835.7	836.9	851.8	848.2	849.5	844.6	846.2	845.2	841.2	838.4	839.0	828.3

[1] One minute late.

Magnetic declination, Fort Conger, January, 1883—Continued.

$\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ from Greenwich (or $4^h 58^m 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
1003.7	1068.5	1058.9	1052.2	1053.9	1043.0	1010.5	1014.7	1029.3	1077.4	1015.5	1077.4	886.2	191.2	24.4	1
821.4	826.3†	816.7	834.4†	790.5⸸	741.1	769.1	779.7†	836.6	839.9⸸	834.2	1059.8	741.1	318.7	24.4	2
820.7	815.5	817.5†	827.5	835.5	838.7	838.4†	841.4†	834.1	845.2⸸	836.6	856.5	815.5	41.0	24.4	3
851.3	847.3	839.5†	832.7⸸	839.5†	847.9	838.2	843.9⸸	849.4	851.5⸸	843.0	851.6	821.8	29.8	24.3	4
846.1	856.5†	845.9	846.2	837.2⸸	835.2†	822.1	8-4.4†	771.8	855.7†	856.2	898.2	771.8	126.4	24.3	5
764.2	633.9†	822.0	806.8	808.7⸸	822.0	780.2	840.2†	813.6†	871.8	830.4	924.1	633.9	290.2	24.3	6
797.4†	749.3⸸	709.3⸸	786.1⸸	790.5	765.9†	772.6	817.0	887.8	871.9⸸	816.6	887.8	709.3	178.5	24.2	7
805.7	947.4†	847.6	827.6	883.4†	814.4	843.1†	838.1	860.2	851.3	875.1	947.4	805.7	141.7	24.2	8
858.7⸸	767.8	829.3†	841.4†	782.2	719.5	797.8	821.6s	825.9	787.4⸸	847.0	910.5	719.5	191.0	24.2	9
815.3⸸	817.3⸸	809.8	804.2⸸	784.6⸸	798.5	793.7	792.1⸸	784.4	787.5	811.0	830.6	784.4	46.2	24.2	10
808.9s	810.0s	810.1s	809.6s	799.8	814.1	813.5⸸	814.6⸸	811.4⸸	812.9†	813.2	841.7	794.8	46.9	24.1	11
813.2	814.5	813.3s	787.0⸸	755.7⸸	761.3†	787.2†	800.7	804.4	807.5	805.2	828.8	755.7	73.1	24.1	12
788.6	778.3	789.2†	785.2	794.3	815.7⸸	820.8⸸	814.1	813.7	805.7	803.4	820.8	778.3	42.5	24.1	13
798.6	803.1⸸	803.2	791.5⸸	780.3	753.5	753.1	794.3†	791.4⸸	819.2	801.7	827.8	753.1	74.7	24.1	14
895.5	924.6	919.1	887.0	859.9	889.9	900.3	887.1	905.9	933.6	905.1	935.6	828.2	107.4	24.0	15
920.3	921.3	916.2	906.4⸸	813.1	835.5†	828.4†	832.0†	847.2	845.7⸸	912.4	959.3	813.1	146.2	24.0	16
825.2s	836.3	773.9†	642.4	864.2	850.8†	839.1†	802.9⸸	836.8†	841.1	840.8	881.4	642.4	239.0	24.3	17
811.4⸸	822.6	825.1⸸	820.6	776.3⸸	762.8†	724.4†	779.9	800.9†	811.8†	825.8	895.5	724.4	171.1	24.5	18
789.4	791.2⸸	825.8	773.3⸸	[1]755.3	773.0	768.3	785.1	741.3	764.1	796.9	843.6	741.3	102.3	24.8	19
819.9⸸	785.9	765.0†	722.1	749.9†	779.3	691.8	783.3s	797.6	808.8	811.9	926.5	691.8	234.7	25.0	20
809.4†	770.7†	767.2†	755.3⸸	763.5	765.9	789.1	812.3†	814.5	824.8⸸	805.9	833.7	755.3	78.4	25.3	21
818.9†	807.1⸸	807.5†	787.5s	783.8	777.8	771.4	759.2	776.6	796.7	805.9	883.5	759.2	124.3	25.5	22
735.9	787.0†	777.7	750.5⸸	781.2	806.7	803.3	803.8	807.1⸸	803.4	796.6	821.9	735.9	86.0	25.8	23
799.2⸸	791.8	788.8⸸	746.0†	774.3	757.6	702.8†	806.1†	768.4†	768.2⸸	795.6	820.2	702.8	117.4	26.1	24
847.2	791.8⸸	807.6⸸	757.7⸸	769.3⸸	732.0⸸	683.9†	777.2†	729.8†	792.6	798.6	846.2	683.9	162.3	26.3	25
732.5⸸	723.1†	811.2†	792.3	--------	740.7	718.2†	728.6	747.5†	784.8†	799.8	932.7	718.2	214.5	26.6	26
806.6⸸	780.3⸸	727.9	740.1†	725.1	678.7⸸	688.7†	686.3⸸	693.5	734.2†	778.0	848.0	678.7	169.3	26.9	27
789.6⸸	788.2	798.7⸸	801.0⸸	773.4	759.7	749.1⸸	767.2⸸	791.3	803.2	790.3	960.0	689.0	271.0	27.1	28
789.3	787.1s	772.1†	767.8†	784.3	770.3	772.1	777.6	762.4†	816.6⸸	797.0	846.9	762.4	84.5	27.4	29
791.9	785.1	776.7	766.1	([2]795.6)	791.5†	785.9†	774.1†	774.1	770.3	793.6	812.8	766.1	46.7	27.6	30
715.2	765.9⸸	745.7	717.1	737.6	749.2⸸	750.0†	755.5	754.2	796.5	777.6	829.3	717.1	112.2	27.9	31
816.8	812.8	813.5	798.9	801.6	793.3	787.3	805.0	808.5	825.2	826.5	851.8	787.3	64.5		

[1] One minute late.

[2] Twenty-six minutes late.

Magnetic declination, Fort Conger, February, 1883.

246° east, + minutes of table. $\phi = + 81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	789.0	797.4	802.4	790.8†	807.1†	823.2⸸	789.0†	787.8†	797.3	793.0⸸	794.7	798.4	798.9	789.2
2	803.1	820.3	799.2	888.4	339.4⸸	776.0†	864.5	787.1†	828.2	817.8⸸	821.7	794.4	828.8	769.1⸸
3	790.5†	887.2⸸	839.8	786.5	800.7†	841.1	841.2†	901.8†	925.7	847.8	853.9⸸	814.7	770.3⸸	802.2
4	836.5⸸	787.0	808.7⸸	830.3	845.8†	830.8⸸	815.3	809.8	844.5	880.6†	845.6⸸	822.4	804.7	775.4
5	804.7	816.7	835.7†	823.2	830.0	812.4	838.5	856.8⸸	830.1	842.3	814.5	812.6†	844.1†	825.7
6	787.5⸸	794.6	807.9†	843.9⸸	853.2⸸	833.2	823.5	820.2	830.8⸸	818.7†	825.8⸸	804.0⸸	806.4	801.2
7	816.6⸸	820.4	836.0	818.1⸸	839.2⸸	816.2⸸	830.6†	834.9†	807.6	815.3⸸	811.6†	812.7†	807.6†	797.9
8	792.1†	808.5⸸	805.8†	805.6s	809.9	807.6†	811.3	805.2	810.0	809.9	813.0⸸	803.3⸸	803.5⸸	801.7⸸
9	797.9†	800.7	805.6⸸	808.9	802.9†	802.4†	816.9	803.2⸸	800.6†	800.1	799.1†	794.7†	796.1	793.2†
10	800.4	805.0†	812.2†	827.2⸸	809.2	815.3	850.3	820.6⸸	812.5⸸	810.2	807.1⸸	804.0	796.8†	797.1
11	781.8	779.5s	782.4s	782.4	786.3	782.9	786.9	792.3†	790.6†	787.5	792.5⸸	790.6	775.0	775.0†
12	795.5	793.5s	795.9	793.0†	797.5	800.0†	798.0⸸	802.1s	797.1	793.5	795 9	787.4⸸	788.3†	780.9
13	814.4†	814.1	814.5⸸	813.4⸸	812.5	812.9†	816.3	812.1⸸	810.8†	814.1†	810.1†	807.5	805.0	799.5⸸
14	822.1	831.5	827.0	825.2⸸	830.2	815.6	826.4	817.9	847.9	852.3	832.9	809.6	795.9	794.6
15	806.8	785.4†	798.1†	804.4⸸	783.6⸸	786.8	799.7	806.0⸸	796.3⸸	790.8	798.8	799.5	798.9⸸	798.8
16	777.1†	820.3†	809.9	792.9	828.8	833.3	804.3⸸	800.5⸸	798.7⸸	804.0	803.1⸸	796.3	793.4⸸	791.0⸸
17	797.8⸸	795.0†	798.5	798.5⸸	796.0⸸	799.5⸸	807.2†	814.3†	806.8	846.0†	812.9	794.0⸸	782.9	780.7⸸
18	792.0	811.4	810.0⸸	793.6	807.3	793.1	804.5	807.3†	790.2†	793.3⸸	800.5	802.2⸸	794.0⸸	786.9
19	785.5	805.3⸸	803.2s	802.9†	814.0⸸	886.5†	827.6	828.7	783.5	786.9†	787.6†	787.8	791.0⸸	789.8†
20	795.2⸸	804.7	823.6†	815.8	814.6†	789.7⸸	796.5†	784.5⸸	821.3	821.2	829.0⸸	804.0	785.0	712.2†
21	799.2	795.1⸸	795.5	794.8†	798.6⸸	796.2	797.9	797.3	793.9†	802.6	796.2⸸	801.8	818.3⸸	793.2
22	777.7	778.9	813.2	794.0⸸	834.5†	846.2⸸	851.5	807.3⸸	836.4	811.3†	815.2⸸	781.1	789.4	774.7
23	845.9⸸	808.7	852.3†	807.2†	802.7⸸	840.8⸸	833.9⸸	888.1	862.8⸸	851.4†	858.3⸸	847.1	806.2	798.6⸸
24	805.5†	795.4	808.8†	818.6†	839.2	861.9†	844.3†	819.8†	839.3†	821.2†	810.0⸸	798.9	814.3	802.4
25	864.5†	942.3	895.4⸸	1095.9⸸	977.2⸸	882.2⸸	930.3	903.4	853.9	937.7	872.6	866.7†	832.1	800.1
26	797.6⸸	799.8†	814.7	776.4	808.3⸸	817.8	821.9	818.0⸸	831.6	819.9†	777.3⸸	800.0⸸	794.0†	800.0†
27	801.3⸸	826.4	812.3†	835.8⸸	822.1	812.5	845.6	834.4	829.7⸸	828.2	821.4	820.9	805.2	814.2⸸
28	853.6	835.9⸸	817.9⸸	830.6	836.7⸸	834.5⸸	859.2	828.4	813.7	833.5	840.3	833.1†	814.7	773.5†
Mean	804.7	812.9	815.2	821.3	822.4	819.7	826.2	821.0	821.1	822.5	816.5	806.8	801.5	790.0

Magnetic declination, Fort Conger, February, 1883—Continued.

$\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ from Greenwich (or $4^h 58^m 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
797.5	790.5‡	753.5	740.1‡	712.1	565.2	810.8	710.6	639.9	742.6‡	767.5	823.2	565.2	258.0	28.2	1
766.2‡	696.9	815.8‡	747.2	606.8	693.3	755.7†	803.5	803.5	768.3	787.3	888.4	606.8	281.6	28.2	2
729.9‡	783.2‡	799.6	733.7	664.3†	701.3	787.6‡	773.3	799.0†	783.1	802.4	925.7	664.3	261.4	28.2	3
769.5†	613.4†	710.5	826.1	680.2	709.7	700.9	779.3	777.9	775.0	786.7	880.6	613.4	267.2	28.2	4
812.7‡	814.0	787.8†	728.3‡	691.1†	802.3†	814.0†	821.5	787.5	812.2‡	810.8	856.8	691.1	165.7	28.3	5
789.7	794.5	742.2	636.3	675.0	738.6†	839.5‡	847.0†	818.5	815.7†	797.8	853.2	636.3	216.9	28.3	6
799.7	806.7	803.2	804.5	782.9‡	773.3‡	761.1	771.5†	774.7	800.4‡	805.9	839.2	761.1	78.1	28.3	7
775.5	790.7‡	788.1‡	767.7	747.1	754.1	766.2†	767.3‡	776.0‡	790.5	792.1	813.0	747.1	65.9	28.3	8
788.0†	796.1†	792.8‡	782.2	785.9	767.1‡	760.9	751.0	777.1	794.3	792.4	816.9	751.0	65.9	28.3	9
786.1†	774.2‡	764.8†	807.0‡	781.9‡	774.2†	776.0†	780.3	779.2	794.5	795.3	850.3	764.8	85.5	28.3	10
772.9	752.5‡	728.1‡	766.4†	765.3†	779.7	792.3†	797.7‡	796.8‡	797.5	780.6	797.7	728.1	69.6	28.3	11
784.4†	761.3†	748.4	773.7	780.7†	784.1	797.7†	814.9†	811.8	818.9	791.4	818.9	748.4	70.5	28.4	12
799.9‡	798.0‡	785.0†	788.2‡	802.0†	804.3	818.2†	821.9‡	805.9‡	815.7	808.2	821.9	785.0	36.9	28.4	13
780.2	734.1‡	737.8†	782.5	753.3	739.3	810.5‡	743.8‡	756.7	784.7‡	798.0	852.3	734.1	118.2	28.4	14
794.8	795.5‡	793.6	795.2	798.9	791.3	776.0	800.5	795.9†	809.7‡	796.1	809.7	776.0	33.7	28.4	15
782.1†	752.8	708.8	772.4	795.3†	785.0‡	781.7	801.4†	793.2	795.8‡	792.6	833.3	708.8	124.5	28.7	16
762.3	751.0	759.3†	661.2	708.6‡	773.2†	795.7	748.8	772.5	784.5†	781.1	846.0	661.2	184.8	29.0	17
793.6	778.4‡	780.2‡	763.2	797.3‡	770.2‡	778.6	746.7	783.9†	814.6‡	791.4	814.6	746.7	67.9	29.3	18
789.4†	778.7‡	784.9	785.2†	779.1†	785.5‡	791.2‡	790.9†	778.5†	801.7†	797.7	886.5	778.5	108.0	29.6	19
749.8‡	764.0	793.4	698.0‡	793.6	782.4	788.1	789.0	782.3‡	789.7†	788.6	829.0	698.0	131.0	29.9	20
781.5	792.6	766.7	784.3†	801.2‡	761.4†	787.7	745.1	744.4	772.0‡	788.2	818.3	744.4	73.9	30.2	21
730.9†	705.2†	619.3	658.0	686.2	754.5‡	713.3†	748.9	788.9‡	799.0†	771.5	851.5	619.3	232.2	30.5	22
781.3†	745.8†	751.1†	759.4‡	819.5	825.6‡	771.8	763.4	797.3†	774.8‡	812.2	888.1	745.8	142.3	30.8	23
805.5	742.9†	599.1†	657.5†	857.4	848.1†	735.6	669.4	607.9	843.5	786.1	861.9	599.1	262.8	31.1	24
816.8	830.4	823.4‡	805.8‡	772.4	786.5	779.2	771.0‡	771.3‡	776.1	857.8	1095.9	771.0	324.9	31.4	25
700.9	816.2	730.6†	749.8	759.4‡	643.4†	736.2‡	751.0	766.2	780.0	779.6	831.6	643.4	188.2	31.7	26
808.8†	724.4†	764.2	750.1	698.2†	434.0	716.1‡	771.3‡	822.3†	722.0†	780.1	845.6	434.0	411.6	32.1	27
808.3	823.2	513.0‡	525.9	786.5	754.4	776.1†	788.9‡	781.1	832.3	791.5	859.2	513.0	346.2	32.4	28
780.6	768.1	748.0	744.6	752.9	745.8	775.7	773.9	774.6	792.5	794.1	826.2	744.6	81.6		

Magnetic declination, Fort Conger, March, 1883.

246° east, + minutes of table. $\phi = + 81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	762.2	767.4↓	801.8↓	846.1↓	856.4†	823.7†	849.0↓	883.1	843.3	805.0	829.0	810.7↓	808.1	727.0
2	787.5↓	809.0	854.6	848.5†	906.7↓	850.3	829.3↓	824.4†	833.7	858.9	837.8†	825.7↓	679.4	813.5↓
3	834.4	812.9†	859.0	829.5↓	838.6	875.3	892.9	858.0↓	874.6	811.1	829.7	803.5	783.8↓	791.8↓
4	813.0	859.6↓	852.9↓	837.8†	819.6	865.4	880.1†	867.8	833.0↓	813.4	822.6	837.3	801.9†	795.6†
5	792.8	781.7↓	827.9	851.9	817.7	871.4	849.9↓	844.0	825.5	828.3†	815.9	824.2	858.1	821.3↓
6	805.6	834.9	824.3†	819.4†	825.7	833.8†	828.9	825.2	813.2†	820.1↓	811.6↓	812.7	820.1†	801.4
7	764.7	829.6	781.6	820.2†	793.7	833.0	857.8	869.2↓	809.0	805.9	788.6	809.0↓	798.3	844.2
8	785.7†	779.4	833.6↓	824.9	820.9↓	837.7†	925.3	835.6	834.6	834.5	827.5↓	819.5↓	789.2↓	784.9
9	810.1†	784.0	842.9	885.3↓	843.9	896.6	833.2	833.8†	787.7	782.3	787.3†	809.4	798.8	797.9
10	792.8	806.8†	807.7↓	806.5†	828.5	835.4†	819.7	800.2↓	820.1	803.8	822.9↓	819.9	809.8	802.1
11	788.2	826.2†	808.4↓	812.7	806.9↓	818.6↓	802.3†	805.6	802.6	804.2†	813.4↓	797.7	799.9†	769.8†
12	792.4†	791.9	799.9	802.8	798.6†	815.0†	798.8	789.2	794.7↓	789.2	797.3	781.0	775.1†	781.8†
13	785.1	822.3	832.6↓	812.9†	844.2↓	857.3†	938.7†	910.8	867.9↓	870.0↓	807.0†	788.4	832.6†	785.5↓
14	801.7†	801.7↓	810.1	810.9↓	829.4↓	807.7↓	874.2	840.3	861.2†	834.6↓	813.0	818.4	801.7	734.9
15	824.4	805.4	801.6↓	794.2	813.0	806.5	861.5	816.8†	825.2	807.3	822.7†	795.5	807.5	813.5†
16	821.1	803.7†	818.6	803.7	810.8†	838.9	821.7	852.9	841.7↓	812.3†	804.4z	801.7↓	788.1	785.6↓
17	817.3	813.7	834.3↓	820.1↓	838.7†	817.9	807.9↓	848.3	815.5↓	824.1	813.5	798.6	789.3	777.1↓
18	799.3†	836.5†	824.2	817.5	795.5↓	834.9†	821.2↓	804.1↓	821.3↓	807.9	807.9†	810.0†	792.3↓	791.2
19	822.4	815.4	813.2†	810.1	806.2↓	809.7†	823.4†	811.6	810.1	804.3	814.7	804.9	790.8	794.8
20	809.3↓	804.2	805.9z	805.7↓	825.0z	798.8†	808.8†	805.0	802.9↓	802.9	800.9	798.9	795.8z	794.9†
21	808.5↓	819.1	808.5	832.9	813.8	801.0	832.7†	921.3↓	892.9↓	822.8†	864.1	850.9†	778.6	785.9
22	805.9†	751.8↓	828.2†	931.4	908.9↓	852.6	841.6↓	869.0	873.6	868.5	848.6	834.9†	778.0↓	775.4†
23	798.0	799.5†	838.5†	838.8	840.5†	840.1	854.3†	887.1	876.4↓	839.9↓	796.7	822.1↓	799.3	777.3
24	806.2	810.8	852.9	845.7	840.8†	844.0	860.7	849.6	844.0	831.1	808.0	800.3↓	799.9†	802.4↓
25	802.8↓	802.1↓	824.7↓	842.7†	858.3†	829.1	867.8	845.5↓	833.7↓	840.4	813.4	811.1↓	823.2↓	817.1↓
26	806.9†	817.7	825.4↓	812.4	839.7	843.3†	820.0†	887.1↓	863.1	832.8	854.0	842.6	841.2	830.3
27	819.1	809.5†	860.2↓	870.9	924.3	847.1↓	787.8†	809.0	887.1↓	863.5	904.9†	889.9	892.5	814.2
28	805.0	835.0↓	863.0	860.3	868.5	842.8†	891.3	866.0†	869.1†	882.9	875.3↓	857.6	758.9	817.3
29	860.3†	806.4	814.1†	884.7↓	850.2	876.7†	940.5†	855.4	845.7	845.8†	749.5†	854.0	778.0†	853.3
30	796.6	857.8†	843.9	859.4	814.3	825.2†	815.5↓	827.1↓	815.5†	827.3†	827.1↓	801.6	793.6	798.7
31	808.4†	795.1	797.8	846.4†	818.7	826.3	836.8↓	861.8	822.8	868.2↓	826.3	827.4†	834.4	823.5
Mean	804.1	809.4	825.6	835.0	835.4	837.3	847.5	845.3	836.8	827.2	820.5	818.0	799.9	796.9

Magnetic declination, Fort Conger, March, 1883—Continued.

$\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ from Greenwich (or $4^h 58^m 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours. 14	15	16	17	18	19	20	21	22	23	Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
805.2†	775.0↓	643.5	751.1	746.5	725.1	632.6†	733.2†	760.7↓	856.5↓	785.1	883.1	632.6	250.5	32.7	1
545.3↓	712.5†	704.0↓	737.4	763.1	753.0	816.0	815.9	817.1	760.1↓	791.0	906.7	545.3	361.4	32.1	2
784.8†	713.6	751.8↓	734.2	723.9†	734.7	776.4	770.0	844.5↓	799.9↓	805.4	892.9	713.6	179.3	31.4	3
796.2↓	801.1↓	818.1	835.9	779.3†	758.8	758.1†	748.3	802.4	808.8	817.0	880.1	748.3	131.8	30.8	4
822.8	797.0↓	778.2	796.7	775.8	785.7	798.1	803.3†	799.3	811.9†	815.8	871.4	775.8	95.6	30.2	5
792.8	797.7†	812.0↓	768.7↓	801.0	785.4	741.0	693.2†	788.4	793.1†	802.1	834.9	693.2	141.7	29.6	6
800.1	799.6	788.1	760.9	663.9	718.9	784.1	764.3	760.5	737.9	791.0	869.2	663.9	205.3	29.0	7
750.2†	617.4	758.7	791.9	784.8	765.2	731.3	718.6	758.7	737.8†	789.5	925.3	617.4	307.9	28.3	8
810.5↓	804.5	801.9↓	749.0†	685.6†	707.0↓	764.5↓	816.1†	799.7	811.8	801.8	896.6	685.6	211.0	27.7	9
788.8	784.5	781.7	766.6=	762.4	741.8	746.7	779.8	764.2↓	785.7†	794.9	835.4	741.8	93.6	27.1	10
766.2↓	776.5	776.5†	756.7†	788.0†	775.4↓	772.9↓	789.9†	798.4†	808.5↓	794.4	826.2	756.7	69.5	26.5	11
755.2†	742.3†	737.6	770.2	757.5	739.5	808.3	758.3	760.2	811.6↓	781.2	815.0	737.6	77.4	25.9	12
502.2↓	800.9	764.8	749.3	781.4	774.2	795.1	807.9†	814.3†	796.2	805.9	938.7	502.2	436.5	25.2	13
769.9↓	792.1†	775.1	745.8	782.5	759.4	791.1†	803.1	803.1†	801.3†	802.6	874.2	734.9	139.3	24.6	14
790.9	777.1	765.8	785.0	786.2†	773.9↓	773.9↓	783.6	812.2	809.1†	802.2	861.5	765.8	95.7	24.0	15
775.1	781.1↓	787.7†	722.0	745.1†	786.8↓	808.8	815.8	806.0†	779.9↓	800.6	852.9	722.0	130.9	24.0	16
776.8	781.7†	790.0	778.1↓	778.8	758.8	787.0†	793.5†	754.3	819.4	801.4	848.3	754.3	94.0	24.0	17
757.2	798.0	799.4↓	794.0	797.9	776.5↓	786.5=	763.3	788.0	799.3	801.0	836.5	757.2	79.3	24.0	18
796.8	796.5↓	801.5	801.9↓	788.6↓	789.2	790.4↓	790.6	797.2	802.2	803.6	823.4	788.6	34.8	24.1	19
794.6=	792.4	789.9	793.5†	787.4=	791.3↓	790.7	798.9	799.5	796.8↓	799.8	825.0	787.4	37.6	24.1	20
778.1	807.1	769.8↓	730.4†	794.8	744.0↓	658.8↓	691.1↓	749.2	795.4†	798.0	921.3	658.8	262.5	24.1	21
817.4↓	774.2↓	702.8	736.3↓	766.6	708.8↓	690.7	739.0†	816.0†	848.8	807.0	931.4	690.7	240.7	24.1	22
703.5†	763.2	780.1†	780.4↓	773.3↓	750.7†	749.6↓	779.5↓	786.7↓	827.7†	804.3	887.1	703.5	183.6	24.1	23
798.3†	802.2↓	793.1↓	779.8↓	775.6	772.3†	791.6	783.7†	786.0†	805.2†	811.8	860.7	772.3	88.4	24.2	24
811.4	797.7↓	758.7	776.6†	747.3↓	761.3	783.3↓	740.8	771.2	811.8↓	807.2	867.8	740.8	127.0	24.2	25
804.3†	819.1↓	804.7↓	803.0↓	785.7	789.5	792.3↓	795.9	690.3↓	790.9↓	816.3	887.1	690.3	196.8	24.2	26
721.6	773.4↓	755.0↓	787.7	649.3†	618.5†	729.7↓	753.1	757.0†	796.1↓	805.1	924.3	618.5	305.8	24.2	27
784.5†	755.9	585.9†	747.7†	743.9↓	716.8	742.2	735.5	716.7↓	795.3↓	800.7	891.3	585.9	305.4	24.2	28
775.6↓	785.6↓	734.3↓	594.6†	696.0†	773.3	781.9	782.3	805.1	802.1	806.1	940.5	594.6	345.9	24.2	29
803.6†	803.3	785.2	767.0	792.4↓	775.0	817.2	780.1	814.9	797.1	810.0	859.4	767.0	92.4	24.3	30
831.3	811.5	738.8↓	763.0	784.8†	767.2↓	747.7↓	788.7	745.9†	833.1	808.6	868.2	738.8	129.4	24.3	31
768.1	778.5	762.4	763.1	761.0	754.1	765.8	771.5	782.8	801.0	802.0	847.5	754.1	93.4		

Magnetic declination, Fort Conger, April, 1883.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	837.0	816.8†	818.8↓	871.2	822.9†	854.1↓	808.1†	833.3	859.6	856.8	819.8	831.0	809.1	778.6
2	785.9	816.7↓	801.9	812.6†	809.6	806.9	838.9	861.0↓	842.0	817.8	806.3	820.1	820.9↓	812.6↓
3	901.0†	917.6	954.9↓	936.7	943.9	941.4	972.6	949.4†	882.6↓	894.2↓	1157.9	851.8†	820.8	1014.1†
4	799.7↓	749.7↓	872.9†	835.4↓	849.7	873.2	865.1↓	856.6	869.2	869.0†	879.2	836.4	884.5	829.3↓
5	901.8	853.8	795.5	842.7	825.3	833.6↓	805.2†	830.5↓	823.5	880.4↓	821.4†	841.0†	825.6	824.7↓
6	760.2	840.2↓	840.4	885.8↓	848.9	902.0	868.2	855.9	843.7	829.2↓	838.6↓	811.2	829.6†	855.0†
7	835.1	829.0	839.6	825.5†	835.5	838.2†	841.0	839.7	840.6	833.9	828.5†	827.2↓	815.9	824.2↓
8	781.1↓	817.9↓	816.2†	831.0†	835.1†	860.4	863.2	866.7	831.1	855.6↓	837.5	840.6	830.3	815.3↓
9	819.2	874.7	846.3	846.1	847.1†	835.3↓	847.3↓	861.3	831.3†	840.5†	886.3	790.7↓	804.4	828.5†
10	804.3†	817.8↓	817.3	846.0↓	846.3†	823.5	820.0†	821.4↓	810.7↓	815.9†	822.1↓	816.0↓	787.0	779.0
11	830.8†	832.6	868.8†	864.6†	839.7	866.6†	852.7†	860.6†	844.7†	851.8	843.4↓	849.6†	796.5†	810.0↓
12	838.8↓	840.6†	844.2	851.8†	836.5↓	832.8	851.6†	844.7†	862.3↓	820.2†	822.2↓	821.3†	848.5	826.9
13	773.3↓	818.8†	818.1	826.6†	833.5†	826.6z	807.9†	859.7	837.6↓	830.4↓	844.8	856.4	817.6	815.4↓
14	821.6z	829.4↓	816.0	852.0↓	867.0	837.7	833.3	830.5	833.1	816.9↓	822.8↓	824.2	823.1†	811.9†
15	879.4↓	893.0	902.4z	907.7↓	920.3↓	927.0↓	926.6	918.4	927.4†	956.0	[1]970.4	942.8↓	933.7	928.2
16	968.4†	828.6	905.8†	841.9†	862.3	871.6	849.0	841.8	818.4	869.8	854.8	852.1†	824.4	806.6
17	828.9	820.4	824.4	919.7↓	834.7	837.3	851.9†	830.9	853.7†	796.7↓	794.7	830.3†	838.5	799.8↓
18	826.6†	817.0	815.2†	798.9z	800.4↓	806.3	785.4↓	702.6	793.8↓	863.8	809.5	818.8↓	812.1↓	815.9†
19	741.9†	846.3↓	865.7	902.7↓	870.5	815.2↓	917.7	892.1	829.5	873.9	865.7	844.9z	845.5↓	806.3
20	768.4†	801.6†	871.0	889.1†	897.5	876.8†	882.7	855.3	801.6†	818.3↓	799.3	774.5	768.5	755.8z
21	788.7	811.6†	806.4	815.8	841.3†	838.0†	831.7↓	803.8	812.9†	769.7†	791.6↓	797.9↓	768.4†	772.4
22	819.2↓	832.9	824.0	820.7	828.4	826.8↓	799.4	848.5↓	820.5↓	850.5↓	804.4†	793.6	807.6	765.0
23	835.0†	816.1†	856.4	839.9↓	826.7	822.6	824.6	825.5↓	816.2	806.1†	835.9	818.6	788.7	781.0†
24	816.7†	808.6z	807.4	816.3↓	812.9	811.6	801.9	806.6	803.8↓	807.2↓	805.8↓	787.9†	794.6†	776.7
25	798.8↓	798.1	849.2	851.0†	819.1†	872.6	843.2	859.0	864.4†	808.3	844.7	875.0	803.6†	786.7
26	869.2	727.9	843.0	799.9	849.7	892.9†	894.0↓	879.5†	864.9	844.5†	768.3↓	760.1	780.4†	798.8
27	796.4†	830.5	800.8†	811.6	823.8†	839.5↓	834.6†	884.0↓	807.1	802.6	820.9↓	852.3	817.3↓	795.2
28	810.4†	820.4†	820.5	847.3↓	853.0	866.1	861.9	898.6	881.6	845.3	852.7	842.1†	807.5†	807.1↓
29	799.9↓	830.8†	840.6†	846.4z	830.9	836.9	837.3†	853.6	863.9	869.0†	857.5	838.9	855.1	849.3
30	819.9	823.0†	817.0	841.0↓	835.9↓	853.0†	844.8	854.9	848.1	830.1†	814.0	855.8	823.1↓	835.9
Mean	821.9	825.4	840.0	845.9	844.9	850.9	848.7	850.9	840.7	840.8	844.0	830.1	819.4	816.9

[1] One minute early.

Magnetic declination, Fort Conger, April, 1883—Continued.

λ = − 64° 43′ 50″ = − 4h 18m 55.3s from Greenwich (or 4h 58m 41.5s west of Göttingen). Magnetometer No. 12.

Göttingen hours. 14	15	16	17	18	19	20	21	22	23	Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
811.4	805.2↓	760.9†	777.8	743.5†	759.9	788.8	768.5	817.2†	807.5↓	810.7	871.2	743.5	127.7	24.3	1
771.4↓	776.8	766.2↓	735.1↓	700.4†	775.0	757.6	766.6↓	752.0↓	762.5	792.4	861.0	700.4	160.6	24.5	2
754.2	745.9↓	630.1	614.5†	817.7	686.4	845.1†	807.4↓	789.4	811.9†	860.1	1157.9	614.5	543.4	24.6	3
732.7↓	778.4	769.1↓	779.8†	697.4	[1]391.4	699.5	763.1	888.6	769.6	797.5	888.6	391.4	497.2	24.8	4
805.4	751.3	771.3	785.9	803.8	757.6↓	731.5↓	742.0	786.3	788.2	809.5	901.8	731.5	170.3	25.0	5
813.9	815.9	819.6	793.0	798.4	797.1↓	782.4	792.3†	812.5†	850.4	828.5	902.0	760.2	141.8	25.2	6
820.8	818.8↓	817.5	816.2↓	813.5	818.4↓	822.8↓	838.8†	837.0†	832.3†	828.8	841.0	813.5	27.5	25.3	7
824.2	813.4	794.8†	777.2↓	782.4	758.3↓	750.2	765.1†	783.3↓	794.3†	813.6	866.7	750.2	116.5	25.5	8
792.4†	812.1	777.6↓	799.0↓	774.3↓	790.0	820.3↓	808.4	808.3	851.4	824.7	886.3	774.3	112.0	25.7	9
783.8	736.1↓	808.4↓	811.7	797.7↓	805.1	828.1	812.2	787.5	802.9†	808.4	846.3	736.1	110.2	25.8	10
809.0†	807.8	811.4	819.7	801.5	803.2	775.2↓	824.4	853.5	854.4	832.2	868.8	775.2	93.6	26.0	11
846.5†	827.0	820.6	808.7	795.5	793.6†	789.0	797.7↓	800.8	851.0†	828.0	862.3	789.0	73.3	26.2	12
788.3	723.8	793.7	774.9	753.7	652.3	763.1	822.5	807.3↓	803.8↓	802.1	859.7	652.3	207.4	26.4	13
806.4	807.6↓	801.3†	797.6†	799.0	812.7	813.3↓	821.3s	837.8	842.5†	823.3	867.0	797.6	69.4	26.5	14
930.2↓	904.1	828.9	912.4	959.2†	927.0↓	972.0↓	959.8†	968.7↓	939.7†	926.5	972.0	828.9	143.1	26.7	15
836.8	818.1	804.8↓	822.4†	820.1↓	842.0	803.0†	799.8↓	835.1	835.8†	842.2	968.4	799.8	168.6	27.1	16
797.0	806.0	814.1†	793.5↓	798.4	787.3†	792.2	819.4†	836.1s	823.3†	817.9	853.7	787.3	66.4	27.4	17
789.1	803.6↓	761.4	757.8	712.1	756.2	772.3↓	771.9↓	718.6	724.1↓	784.7	863.8	702.6	161.2	27.8	18
801.5↓	777.3†	733.2↓	739.7	729.3↓	685.6	671.5↓	689.9	642.2	722.3	796.3	917.7	642.2	275.5	28.1	19
680.3↓	697.3↓	690.2	670.8	650.5	650.9†	759.1†	687.1↓	834.7	783.7	777.7	897.5	650.5	247.0	28.5	20
765.7	773.9↓	773.1	769.1↓	778.2	777.3†	770.9↓	784.1†	804.7†	793.1	793.3	841.3	765.7	75.6	28.9	21
773.7	783.7	766.6†	750.0	749.7	785.1↓	803.8	809.0	779.7	798.9↓	801.7	850.5	749.7	100.8	29.2	22
777.0†	782.9	794.6†	799.3↓	779.2	814.4†	828.5	818.6	825.0	835.3†	814.5	856.4	777.0	79.4	29.6	23
790.7	757.7	730.7	738.7	639.0↓	671.6	678.3†	677.4†	701.6	699.0	764.3	816.7	639.0	177.7	30.0	24
739.0	782.5s	787.6	728.7†	750.4↓	756.4↓	777.8	777.5	791.4	794.7	806.7	875.0	728.7	146.3	30.3	25
789.2	762.3	756.0	737.7↓	641.3†	702.9†	708.0	742.2†	738.7↓	809.5	790.0	894.0	641.3	252.7	30.7	26
780.9	810.1†	795.1	780.5↓	759.5	741.3	752.4	737.7	754.0†	818.3	801.9	884.0	737.7	146.3	31.0	27
823.5	804.6s	815.2†	799.9	765.2	737.5	753.1↓	802.0†	828.1	832.7	824.0	898.6	737.5	161.1	31.4	28
836.2†	821.9	801.2	811.3†	769.9†	782.3	742.5↓	767.2	772.5†	820.3	822.3	869.0	742.5	126.5	31.7	29
823.8†	800.7	797.2↓	773.4	749.0↓	739.4↓	746.8†	634.8†	716.2†	757.5	801.4	855.8	634.8	221.0	32.1	30
796.5	790.2	779.7	775.9	764.3	751.9	776.6	780.3	797.0	807.0	814.2	850.9	751.9	99.0		

[1] One minute early.

Magnetic declination, Fort Conger, May, 1883.

246° east, + minutes of table. $\phi = + 81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	849.5	847.6	868.0†	865.7↓	867.0↓	887.1↓	965.9†	923.6↓	872.7	883.7↓	905.6↓	855.2†	872.5	869.6↓
2	817.3↓	829.5↓	876.0	861.0	899.5†	845.2↓	819.2↓	867.3†	878.6↓	888.5	897.8†	845.4	818.5	805.2†
3	811.4†	871.1	782.4↓	810.6†	844.6†	868.3†	841.9↓	883.0	844.9↓	838.2	842.4	840.4	833.7↓	812.6
4	754.0	796.4	793.6†	818.7	843.0	841.0	830.0†	832.0↓	787.9↓	829.6	829.4†	834.7↓	820.3↓	834.9
5	800.8	814.3†	824.1	786.8s	821.2†	819.9	823.8	859.3†	798.4	814.2†	770.9†	782.3↓	793.0	814.3↓
6	761.6↓	810.7	839.4	865.0	817.5	846.9s	863.0	879.2	817.9↓	855.7	835.4†	804.4	812.8↓	815.0
7	823.0	844.0†	839.7	849.5↓	873.1	883.9	844.1↓	867.4†	885.8↓	839.3↓	824.5	847.5†	813.3	785.1
8	834.5↓	832.9	837.3	863.2↓	852.1†	874.4	835.1	805.7↓	832.7†	858.5†	840.8↓	808.2↓	818.2†	742.2↓
9	774.7†	795.2	805.8	775.3↓	795.1†	759.3↓	740.7↓	775.3	800.6↓	794.3	762.1	758.8†	742.7↓	767.1
10	836.6	850.6	820.5	866.6	857.4†	846.4	839.4†	877.0†	826.4	810.6↓	850.8†	806.4↓	835.8†	823.7
11	861.2	853.1↓	818.1†	857.9	842.3	860.2↓	833.2s	861.7	853.7	832.3↓	844.6↓	833.6	840.2	810.5
12	802.2	824.8↓	835.1	854.6	878.5	819.5s	849.3	853.6↓	860.9↓	834.5†	821.8	826.7	813.3	828.1
13	843.8	847.5	823.8†	842.8†	838.6	841.1	835.2↓	829.5	851.8	840.8	833.0	816.5†	815.1†	794.6
14	786.2	820.0†	784.2↓	776.2↓	777.7†	909.6	867.6†	846.6†	923.8	896.7	855.8	844.4†	832.3	787.1
15	817.7↓	816.6†	814.9↓	805.2↓	802.2†	833.3↓	835.2	820.1†	834.5	824.4†	866.9	865.9↓	852.4	818.9↓
16	828.2	811.8†	806.2†	821.1	829.7	818.8↓	820.8	851.8†	902.4†	875.0↓	920.1↓	851.4↓	815.2†	670.9↓
17	812.9	817.3↓	799.2	810.5	802.3↓	803.9†	822.5	801.0†	787.2↓	872.9↓	815.4	796.6	755.4↓	817.8↓
18	748.1†	863.2	861.8	874.0↓	846.0	874.6†	847.7†	910.6†	793.3	772.8†	772.9	831.3↓	811.6	740.2
19	835.7†	827.9	840.0†	827.1↓	817.4	835.3	849.8†	922.3	773.2↓	823.6	842.6†	884.8†	831.9	811.6↓
20	841.7	800.0†	834.1†	835.4↓	850.4	817.1	858.9	790.1†	745.0	784.1†	802.9	770.7	791.6†	811.6↓
21	795.2	837.6	855.1↓	896.0	920.3	821.9	852.6	921.5	902.3†	892.0↓	809.8	884.8†	823.4↓	854.0
22	740.2	909.1†	810.5	840.0	832.7†	918.6†	878.7	934.9	806.4	906.7	830.9↓	867.7	835.3†	801.8
23	832.4	795.3	788.4	845.8	914.6	916.9	818.6	908.5†	873.9†	825.2	883.6†	859.9	819.6	846.7
24	766.9†	834.0	838.1	829.9†	806.9↓	824.8↓	827.2↓	848.9	813.9†	850.9	869.1	870.8	869.1	843.2
25	799.1†	811.3†	802.9	820.5↓	856.1	864.2	852.4	847.6↓	812.6	816.8	827.1	801.3†	805.7	796.4
26	729.8†	853.6↓	806.5	798.2†	816.3	853.8†	821.8	830.5	876.6↓	944.9↓	887.3↓	828.5	877.0	806.7
27	835.6	852.9	813.4	842.3†	815.5	816.2↓	873.2	791.9	857.6	823.0	850.5	875.4↓	838.5	807.2
28	763.8†	767.8	840.2	813.3†	792.8	872.6	783.2↓	824.0	894.0†	846.0	821.2↓	853.0	852.0†	823.8
29	843.4†	792.2	797.0	825.0	865.4†	841.5↓	836.7†	875.9	879.9	859.8	858.0	795.2	818.2	787.9†
30	778.5↓	834.0†	821.0	817.5↓	837.9	859.1	809.4†	849.8	854.4↓	885.3	830.8	851.8	839.2	817.3
31	700.2†	773.2†	796.4	793.6†	755.7	844.0↓	867.4†	883.7	827.4↓	725.5	773.7↓	850.8†	764.6	766.9
Mean	800.8	827.0	821.7	831.9	837.7	849.0	840.1	857.2	841.0	843.4	838.3	833.7	821.4	803.6

Magnetic declination, Fort Conger, May, 1883—Continued.

λ = − 64° 43′ 50″ = − 4h 18m 55.3s from Greenwich (or 4h 58m 41.5s west of Göttingen). Magnetometer No. 12.

Göttingen hours. 14	15	16	17	18	19	20	21	22	23	Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
863.4↓	852.4↓	810.0†	847.0	759.7	781.6	770.2	755.5↓	761.1	811.8↓	847.8	965.9	755.5	210.4	32.5	1
830.4↓	811.8↓	802.5↓	786.0	766.6↓	810.6↓	815.3s	732.8†	765.2†	807.5†	828.2	899.5	732.8	166.7	32.1	2
842.3	797.3†	795.4	788.1↓	772.7↓	777.7↓	760.3	760.7†	767.9	797.1†	816.0	883.0	760.3	122.7	31.7	3
818.3	813.7†	787.0↓	799.1	763.9†	770.4↓	710.3	763.7	742.3	776.8↓	799.6	843.0	710.3	132.7	31.3	4
775.2↓	756.9†	737.6	721.9	731.4†	724.0↓	662.2	753.6†	752.0↓	753.3	778.8	859.3	662.2	197.1	30.9	5
808.2	808.2↓	831.9	829.2	710.7†	768.7	773.1†	803.2†	760.1	805.0†	813.4	879.2	710.7	168.5	30.5	6
766.4†	755.3†	728.4	691.5	737.9†	738.0	751.3	790.4	771.1†	867.8	809.1	885.8	691.5	194.3	30.1	7
784.5	737.7↓	796.7↓	724.1↓	718.0	764.0†	719.6	761.2†	775.2	790.1†	800.2	874.4	718.0	156.4	29.7	8
732.6	774.5↓	793.1†	773.7↓	766.2	752.8↓	713.4↓	790.8	833.8†	827.1	775.2	833.8	713.4	120.4	29.3	9
823.6	819.8↓	816.8↓	782.9↓	775.4†	772.8	786.6	800.2†	829.2	813.5	823.7	877.0	772.8	104.2	28.9	10
807.3↓	822.7	793.7	808.1†	815.1↓	811.2	811.3	828.1s	816.6	834.7	831.3	861.7	793.7	68.0	28.5	11
824.9↓	820.4s	802.3	810.0↓	821.5↓	808.1	842.3	797.3†	788.5	823.5	826.7	878.5	788.5	90.0	28.1	12
795.7↓	813.7	790.9↓	740.5†	756.2	778.1†	784.7	768.0	770.9s	802.7†	810.6	851.8	740.5	111.3	27.7	13
784.8↓	800.3	824.5	810.5↓	806.8†	821.5†	860.0	825.5s	862.0	840.3	831.0	923.8	776.2	147.6	27.3	14
810.8↓	794.4†	786.3↓	752.2†	746.8	710.0	732.4↓	811.5	828.9†	825.5↓	808.6	866.9	710.0	156.9	26.9	15
785.0†	768.5↓	731.5↓	725.1↓	753.3	756.4†	810.8	825.9†	845.3†	834.4	810.8	920.1	670.9	249.2	26.9	16
783.6	793.2	767.4↓	811.8	778.0↓	725.8	745.5	778.3	830.1	777.2	796.1	872.9	725.8	147.1	26.9	17
763.3↓	732.2	738.6	763.5†	776.0†	782.0	784.7↓	757.1↓	776.5	826.3	802.0	910.6	732.2	178.4	26.9	18
794.5	782.6	762.0↓	761.6†	699.1↓	714.7†	754.6†	780.5†	815.7	769.3	806.6	922.3	699.1	223.2	26.9	19
821.3↓	778.8↓	742.8	748.9	708.1	650.1	618.7	643.4†	748.2†	741.1	772.3	858.9	618.7	240.2	26.9	20
740.3	710.9†	760.6	701.8	734.7	731.9	661.2†	704.6†	679.2	780.9†	803.0	921.5	661.2	260.3	26.9	21
680.2↓	767.8↓	791.4↓	784.1↓	703.2↓	735.2	781.0	778.3	807.3†	766.1†	812.8	934.9	680.2	254.7	26.9	22
770.1†	771.1†	750.6↓	693.1↓	799.8†	810.5	800.9	813.2†	825.6†	814.9	824.1	916.9	693.1	223.8	26.9	23
789.7	780.7↓	750.2†	736.3	739.2↓	745.9	737.5†	788.3†	781.4	754.1†	804.0	870.8	736.3	134.5	26.9	24
776.3†	760.6	769.6↓	768.6	754.4	753.6†	734.9	743.5	728.4	801.1†	796.0	864.2	728.4	135.8	26.9	25
819.9↓	777.5	700.8↓	739.5	792.6	711.0†	688.7↓	751.9	790.4†	767.1	803.0	944.9	688.7	256.2	26.9	26
781.2	848.5	770.9	776.0	762.6	740.3	769.2	692.4†	706.0†	692.4†	801.4	875.4	692.4	183.0	26.9	27
864.7↓	829.7↓	719.7	716.7	737.1†	802.6	780.3↓	840.8	782.7	786.3	808.7	894.0	716.7	177.3	26.9	28
822.8↓	786.7†	735.7†	729.0	758.5↓	753.7	794.4	790.5	748.4	776.9	807.2	879.9	729.0	150.9	26.9	29
848.9↓	803.8	803.4	745.5↓	780.8†	757.0↓	786.5†	800.4	705.3†	759.1	811.9	885.3	705.3	180.0	26.9	30
779.5	757.4↓	791.2†	709.7	732.9	721.2↓	704.4↓	777.3	799.5	795.9↓	778.8	883.7	700.2	183.5	26.9	31
796.4	788.0	773.6	760.5	756.7	757.5	756.3	774.5	780.5	794.2	807.7	849.0	756.3	92.7		

Magnetic declination, Fort Conger, June, 1883.

246° east, + minutes of table. $\phi = +81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	782.2	798.0	782.4	775.1†	811.1†	807.1	809.9	775.2	746.4†	752.1†	823.4	861.9	821.0	831.2
2	726.3†	791.8†	831.9†	820.5†	927.0↓	810.5†	875.2	980.8↓	891.4↓	920.6	789.7	902.6↓	859.5†	902.8
3	828.6	877.8	813.8	862.2	880.0↓	852.8↓	861.0†	792.8↓	884.5	938.5†	852.0	833.4	865.9	765.8
4	859.2	853.5†	830.2	857.3	840.9†	863.0	874.2	864.6†	790.8↓	874.3	780.9	774.6	786.9↓	780.6
5	801.2	809.9	835.8↓	841.8↓	830.6↓	820.8↓	819.8	844.0	814.1	811.0	842.3†	782.5	786.9	800.3↓
6	816.2	822.3†	812.9	836.3	837.8	849.0↓	858.5↓	834.2↓	887.2↓	842.0†	865.5	925.1†	1004.5↓	869.9↓
7	780.3†	790.7↓	832.4	824.1	839.0	848.2	844.3†	844.5	824.1	854.3↓	790.6	821.1	812.6↓	826.0
8	784.9†	806.3	824.9	832.5↓	839.6↓	815.6†	845.7	835.5	830.0	809.5	850.6↓	834.0↓	840.7↓	854.4
9	752.0†	813.2↓	781.0†	830.1↓	905.1†	865.5↓	870.4	810.3↓	851.9†	873.6↓	867.9	854.9↓	793.5†	869.8↓
10	852.3	822.3	865.7	841.7↓	817.8	821.4	820.4	815.2	839.5	802.2	828.0	815.4	816.1↓	807.1
11	801.7†	814.0	815.6†	829.5	832.7↓	835.2	861.3	852.6†	831.8↓	824.7	878.7↓	830.5↓	844.4†	743.5
12	808.9†	846.7†	838.2	837.4†	829.3†	835.8†	841.2†	802.9	834.7↓	793.1	783.9†	791.2†	806.0†	815.5
13	850.8†	845.3	849.4↓	860.0	863.3†	847.7	875.7†	900.7↓	829.1↓	787.5†	835.8↓	766.4	743.8	804.0
14	749.4	784.2↓	930.0↓	938.1	917.1†	896.0↓	882.4	960.8↓	962.2↓	958.9	867.1†	743.7	786.5↓	813.5
15	793.0	809.8	813.4	849.4↓	814.6	840.8↓	827.5†	826.5↓	812.8	836.9↓	740.4	778.2	745.4	750.3
16	741.6	797.9	827.9	880.1↓	848.9	818.6	840.4↓	826.8†	839.8	830.3†	804.0	757.0↓	809.2†	807.0†
17	801.7†	827.3†	922.4↓	899.6	1029.8	865.1	868.1↓	961.2	878.6	869.5↓	693.8	965.8†	906.5↓	961.2
18	835.9	800.8†	869.5†	882.1	905.5	763.7	926.5	907.5	916.1↓	930.9↓	860.5†	905.9	808.8	843.6
19	[1]840.4	852.3†	843.2	875.6	880.9	851.7↓	893.7↓	927.8	884.9	824.2	851.7†	829.0↓	818.5	793.5
20	787.3	823.7	825.6↓	836.4	834.0	881.2	905.7	862.9	855.9↓	802.3	894.1	878.3	782.8	792.1
21	811.2†	848.2	925.7↓	785.5†	854.5	804.5↓	849.7	875.7	789.2	793.4	809.6†	807.8	820.3	797.3
22	828.4	817.6↓	824.3	848.1↓	842.9	842.0	802.4↓	802.8	854.0	878.7	781.9↓	867.3	805.5	800.9
23	806.5†	789.3	912.5↓	918.2	984.7↓	911.4	888.5	943.4	853.5	846.3	907.2	825.3	876.6	834.5
24	794.8	820.8	823.3	822.0↓	799.9	793.0↓	835.5	943.0	775.5↓	836.6↓	866.6†	822.8↓	794.8†	797.0
25	802.1	818.1†	790.6	771.8	812.6↓	826.5↓	845.4†	790.9↓	786.4†	813.2†	737.6†	833.6	813.5†	812.2
26	757.6†	814.7	819.6†	770.9†	819.4†	809.1↓	827.2	838.8↓	907.4†	898.1†	985.3	871.8	877.6	819.0↓
27	792.1	833.9	831.5†	737.1↓	729.0	830.3↓	851.0	826.8↓	996.4	889.2	935.8	928.3	859.9	916.8
28	868.0↓	782.4	898.4	847.4↓	802.3	918.7	874.7	788.8	767.8	869.0†	817.5	800.5	819.1	845.8†
29	813.1	830.9	823.4	804.8	827.7↓	830.1	831.6↓	813.3	862.9↓	887.9†	875.0	858.1	796.7†	775.6↓
30	815.1†	817.7†	814.6†	805.0	850.0↓	806.6†	822.2†	844.8†	917.0↓	840.2†	803.7†	937.8	861.9†	888.2
Mean	802.8	818.7	840.3	837.3	853.6	838.7	854.3	856.5	850.5	849.6	834.0	840.2	825.5	824.0

[1] One minute early.

Magnetic declination, Fort Conger, June, 1883—Continued.

$\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ from Greenwich (or $4^h 58^m 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
777.1	750.3	743.4	733.5	720.4	715.3↓	645.6	650.5	667.5	697.1↓	761.6	861.9	645.6	216.3	26.9	1
821.1	806.3	737.8	705.8↓	652.7	676.9	689.6†	769.6	747.3	743.1↓	807.5	980.8	652.7	328.1	26.9	2
791.6†	788.0	716.2↓	706.3	766.3†	792.2†	729.1	757.8†	770.6	851.1↓	815.8	938.5	706.3	232.2	26.9	3
802.0	768.6↓	800.6†	793.8	768.2	756.4	752.3†	749.7	763.3	796.5†	807.6	874.3	749.7	124.6	26.9	4
802.4	809.4	798.9†	781.8↓	776.4†	792.3†	796.4	796.9↓	830.6	830.0†	810.7	844.0	776.4	67.6	26.9	5
798.9↓	814.6↓	794.4†	730.5	721.7	725.6	686.3	642.4	674.8	775.0†	809.4	1004.5	642.4	362.1	26.9	6
783.1†	794.8	791.8↓	755.0	764.7↓	764.6	697.3	738.9†	736.4	768.6	797.0	854.3	697.3	157.0	26.9	7
784.3	794.1	786.6↓	724.1	759.6†	736.1†	745.1	751.1†	773.9↓	744.3†	800.1	854.4	724.1	130.3	26.9	8
787.6†	828.3	792.3↓	746.5	681.4↓	718.1	729.8	749.5	754.0↓	761.5	803.7	905.1	681.4	223.7	26.9	9
805.1	804.0	836.7	828.9	738.3	740.9↓	818.5	743.3	757.7†	780.5	809.1	865.7	738.3	127.4	26.9	10
754.6†	739.2	752.1	724.3	727.0	759.8	754.3↓	815.8	770.1	820.2†	800.6	878.7	724.3	154.4	26.9	11
748.7↓	757.6†	714.4	736.2	749.1†	765.5	719.8	744.9	750.5†	918.2↓	794.6	918.2	714.4	203.8	26.9	12
907.5	856.9	782.0†	706.4	659.1†	802.9†	748.6↓	697.5↓	807.6↓	864.5↓	812.2	907.5	659.1	248.4	26.9	13
790.2↓	767.3†	730.9	702.7	766.7↓	695.3	726.3↓	710.4	791.3	808.7†	820.0	962.2	695.3	266.9	26.9	14
767.7†	787.9	772.9	774.5	765.9†	760.3	696.2↓	762.9†	802.3↓	800.6	788.8	849.4	696.2	153.2	26.9	15
805.7	779.8	785.7	782.0	741.4	748.4†	748.5†	771.5†	800.5↓	756.3†	797.9	880.1	741.4	138.7	26.9	16
884.9	701.0†	667.2	686.8	717.0†	788.4↓	759.3	761.2†	710.6	791.1	829.9	1029.8	667.2	362.6	26.8	17
864.2	801.7	712.2	826.4†	550.1†	713.6†	690.9↓	705.3†	772.6†	821.3	817.3	930.9	550.1	380.8	26.8	18
751.7	795.2	745.3	661.6	772.4↓	816.4	816.2	769.6	789.4	807.0↓	820.5	927.8	661.6	266.2	26.8	19
771.7	774.0	746.2†	670.1	709.0†	783.0	711.9	758.9†	662.6	764.7	796.4	905.7	662.6	243.1	26.7	20
795.8	782.1	790.8	773.5	759.8	754.4	745.4↓	763.7	790.6↓	798.6	805.3	925.7	745.4	180.3	26.7	[illegible]
803.4	814.1↓	740.1↓	800.2↓	751.5	698.1†	806.8↓	912.0	760.7	799.9†	811.8	912.0	698.1	213.9	26.7	[illegible]
773.4↓	789.9	796.6†	798.9	770.2	752.0†	738.6	696.5	719.0†	771.3	829.3	984.7	696.5	288.2	26.6	[illegible]
759.0↓	779.3↓	757.1	748.0	747.9↓	722.2	695.2	710.5	732.0	832.3	792.0	943.0	695.2	247.8	26.6	24
776.9	764.9	713.5†	670.0	669.6	680.6†	610.9	757.3	712.8↓	791.8	766.8	845.4	610.9	234.5	26.6	25
874.4↓	736.9↓	788.9↓	694.1†	706.1	743.4↓	719.6	723.2	745.5	823.4	807.2	985.3	694.1	291.2	26.5	26
825.1†	840.7	763.2†	658.5↓	815.4†	763.3↓	648.8	632.7	678.8†	749.3†	805.6	996.4	632.7	363.7	26.5	27
798.5†	807.4†	697.8	766.8	754.6↓	761.8†	702.0†	789.8†	826.7	803.2↓	808.7	918.7	697.8	220.9	26.5	28
815.5†	799.5↓	785.5	798.4s	766.6↓	774.1	719.3	725.8↓	752.0	780.4	806.2	887.9	719.3	168.6	26.4	29
816.7↓	660.6†	658.9	676.6	700.6†	703.7↓	712.0	697.1	760.3	808.0	792.5	937.8	658.9	278.9	26.4	30
801.3	783.1	756.7	738.7	731.7	746.9	725.4	741.9	753.7	795.3	804.2	856.5	725.4	131.1		

Magnetic declination, Fort Conger, July, 1883.

246° east, + minutes of table. $\phi = + 81° 44' 00''$

Day of month.	Göttingen hours.													
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.	13
	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	791.2†	724.9	840.0‡	861.9	930.7	911.9†	983.7	806.6	931.2‡	852.5	886.9	887.5	846.5	855.6
2	750.2	828.1	805.6	873.2†	880.6‡	953.7	916.5	857.6	909.2	823.4†	780.3†	819.3†	812.3‡	838.4
3	869.5	841.4	818.3	823.2	767.3†	824.8	804.4	790.6†	798.9‡	955.4	866.8†	873.5†	865.1	831.5‡
4	781.1	803.8	817.1‡	853.4‡	827.0†	839.2	918.0	880.8	892.1	846.3	859.0†	885.1†	847.1‡	814.0
5	804.9	794.9†	776.8	823.9	821.5	804.3†	853.1	845.2	852.0	861.6‡	761.1‡	754.0	858.9	798.5
6	788.3†	780.8†	805.4‡	812.8	782.4†	793.0†	862.9	802.4‡	870.7	812.7	715.1‡	792.6†	772.5‡	699.6†
7	850.2	628.5	789.0	821.6†	835.6‡	846.7	824.1‡	848.9	857.6†	776.5‡	890.5‡	813.3‡	805.3	805.8
8	895.0	854.1†	850.5	822.2	819.1	799.5	918.2‡	937.4‡	961.8‡	907.1	738.7	846.3†	802.2	733.7‡
9	775.5†	879.4‡	822.6‡	838.1‡	827.8	825.6‡	828.7	809.1‡	767.6‡	745.5	900.4	677.6	732.6†	756.8
10	977.6‡	864.0	757.7‡	883.9‡	911.5‡	943.3†	705.0	837.4†	941.7‡	849.1	927.6‡	819.8	727.1	750.5
11	720.8	788.6	873.7	799.8	822.0	854.5	872.4	776.8‡	863.1	995.6	895.5†	823.6†	849.8	797.7
12	737.6	887.9‡	839.6	931.5	878.2	953.9‡	910.7‡	913.9‡	892.2‡	852.0†	855.0‡	751.7†	796.2	764.0
13	830.0†	808.8†	850.6	827.9	832.6	844.1†	844.3	885.9	889.2‡	891.8	909.4†	921.8	895.4	847.8‡
14	782.4‡	770.5	779.1	839.2	809.4†	798.8	818.6†	819.6	827.1†	790.6‡	876.6	845.7	869.9‡	814.3‡
15	799.2†	818.4	812.4‡	827.2	828.2	825.9	818.3	845.3†	831.5‡	788.0‡	775.8	791.6	774.9†	783.2
16	786.8	816.7	754.6	829.7	795.4	956.7‡	897.4†	863.8	701.5†	814.0	810.6	806.5	840.8	833.0†
17	778.3‡	757.6†	789.5	816.2	824.8	795.6	947.2‡	791.3‡	928.8	822.8	879.6†	798.7	841.7	783.3†
18	806.4†	872.3	856.0	802.9†	847.4	888.8	804.7†	787.6	932.9†	836.0	891.3	1085.0	573.4	887.4
19	847.6†	745.3	779.2	915.1	930.1	839.7†	873.5‡	828.1†	839.8	825.4	830.1	827.1	804.8	779.5
20	748.7‡	736.4	789.0†	811.6	842.7	842.6†	843.6†	876.1‡	854.8	865.2	862.9	791.8	858.6‡	784.3
21	788.6‡	820.9	790.7	803.7‡	822.5‡	820.9†	816.5†	813.3	899.5†	869.2	836.9‡	832.3‡	818.4†	810.9
22	831.8	810.6‡	817.6	823.1†	809.0†	806.2‡	830.1†	795.2	805.6†	765.4	789.5‡	818.4‡	780.0	785.5
23	808.6	821.1	885.3†	861.9†	828.0†	821.4‡	848.8	830.5	833.6	833.1†	791.7‡	842.2†	802.0†	786.8
24	812.9†	846.0†	782.1	855.6‡	795.6†	836.9	859.2	878.9	824.8‡	908.4	899.0†	764.2	869.8	796.0
25	790.9	783.3†	766.9	873.6†	909.5	819.8	829.8†	831.2	797.8‡	823.3†	838.7	848.3	818.4	803.3
26	815.6‡	799.6‡	799.6†	808.4†	814.4	836.9	797.5‡	856.8†	792.1	784.3	813.6†	859.8	840.6	826.6
27	809.2‡	811.4†	804.2†	808.1	852.1†	805.5	788.5	814.7	938.5	903.3	784.0	784.6	789.8	761.3†
28	822.9	817.6	820.9	826.2	826.9	825.4	804.3	795.9†	780.1†	787.4‡	774.1‡	735.7	784.7	791.4
29	816.2	805.3†	814.2†	790.7†	802.1†	829.7	824.8†	829.9†	858.8‡	864.1	813.0	760.1	774.1	786.4†
30	848.2	914.1	891.3†	940.7†	960.5	924.0	967.5‡	906.7	985.0	859.7	724.3	859.7	804.6	814.4†
31	809.8†	846.0†	848.4†	784.4	838.2†	861.4	884.1	877.1‡	931.6	876.0	915.1†	905.2‡	892.1‡	864.3‡
Mean	808.9	809.0	813.8	838.4	841.1	849.4	854.7	839.8	864.2	844.7	835.3	826.5	811.3	799.5
32	741.5‡	782.5†	770.7	838.8†	887.6†	900.5†	845.0	803.5†	762.7	968.4	936.0†	1057.8	960.6	814.9

Magnetic declination, Fort Conger, July, 1883—Continued.

$\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ from Greenwich (or $4^h 58^m 41.5^s$ west of Göttingen). Magnetometer No. 12.

Göttingen hours.										Daily mean.	Highest reading.	Lowest reading.	Difference.	Axis.	Day of month.
14	15	16	17	18	19	20	21	22	23						
′	′	′	′	′	′	′	′	′	′	′	′	′	′	d.	
817.0	776.8	632.7†	714.3⸸	663.6	645.4	659.2†	682.9	700.7	745.6	797.9	983.7	632.7	351.0	26.4	1
840.1†	865.5	801.2⸸	802.1†	759.6†	806.4	768.4⸸	827.7⸸	751.1	888.3†	831.6	953.7	750.2	203.5	26.3	2
817.3	751.1⸸	762.5⸸	754.6	747.9	718.6†	744.9z	728.2	716.3†	771.3⸸	801.8	955.4	716.3	239.1	26.3	3
800.0	793.3⸸	749.3	753.7⸸	795.3⸸	783.7	760.8	777.8	------	786.8⸸	818.0	918.0	749.3	168.7	26.3	4
785.1⸸	733.3	708.5	670.0	662.9	650.6	658.8†	736.0†	701.6	750.9⸸	769.5	861.6	650.6	211.0	26.2	5
723.6†	676.6†	715.3	714.8	732.6	732.9⸸	699.7⸸	782.6⸸	826.(	851.3	772.8	870.7	676.6	194.1	26.2	6
818.8⸸	862.6	727.3	703.9	604.0	669.8†	673.7†	637.4†	809.4⸸	844.8	781.1	890.5	604.0	286.5	26.2	7
731.0⸸	815.4†	774.4	660.7†	747.5†	629.6	654.1	659.2	799.5	747.5†	796.0	961.8	629.6	332.2	26.1	8
765.7†	848.9	865.8	839.8⸸	816.6†	805.6†	793.5	665.1⸸	755.3	867.0	800.4	900.4	665.1	235.3	26.1	9
805.4†	772.9	741.6	773.3	760.8⸸	746.6	768.1	717.1⸸	723.1	759.1	811.0	977.6	705.0	272.6	26.1	10
838.6	875.0⸸	789.5	778.7†	738.4	874.8	722.1	742.5⸸	708.6⸸	716.6	814.5	995.6	708.6	287.0	26.0	11
726.8	731.9†	745.9	739.8	744.6⸸	773.3z	771.8	760.1⸸	776.5	816.7†	814.7	953.9	726.8	227.1	26.0	12
809.5	725.5	705.9	712.0⸸	716.0	707.8	754.0	757.4†	780.4†	716.1	811.0	921.8	705.9	215.9	26.0	13
868.2†	729.0	579.4†	732.3	825.7†	736.4	826.6⸸	876.9	859.7	823.3⸸	804.1	876.9	579.4	297.5	26.0	14
784.3	762.2	785.8	705.8⸸	498.0	742.3	726.0†	701.0	944.9⸸	692.5⸸	777.6	944.9	498.0	446.9	25.9	15
811.0	780.7⸸	737.2⸸	734.3	704.0†	707.9⸸	681.8	679.3	724.1	828.5⸸	787.3	956.7	679.3	277.4	25.9	16
805.5⸸	770.0	775.5	778.2⸸	748.5†	771.8	733.3	758.7	775.4†	802.9	803.1	947.2	733.3	213.9	25.9	17
851.3	1026.9†	671.6†	809.2	711.9⸸	600.7⸸	446.7	697.5†	661.7⸸	938.2⸸	803.7	1085.0	446.7	638.3	25.9	18
746.1	722.7	735.9	751.5†	732.7⸸	713.7⸸	735.5†	670.2	687.5	731.4†	787.2	930.1	670.2	259.9	25.9	19
782.3	785.9	749.9⸸	798.0	726.6†	733.6†	762.7	753.9⸸	778.5	801.6⸸	799.2	876.1	726.6	149.5	25.8	20
812.4†	810.0⸸	792.9†	809.4	814.5	794.8⸸	774.0	815.1⸸	826.2	824.1	817.4	899.5	774.0	125.5	25.8	21
790.5	791.8	787.3	809.3	776.4	781.7†	761.6⸸	771.3	777.6	779.2	795.6	831.8	761.6	70.2	25.8	22
776.0	787.1	773.0	779.6	781.5	731.2⸸	768.0	788.3	782.6†	829.5⸸	808.0	885.3	731.2	154.1	25.7	23
822.2	811.5	652.6⸸	667.0†	690.2	703.1	743.9⸸	759.6	753.2	765.5	795.8	908.4	652.6	255.8	25.7	24
768.4	736.1⸸	672.2⸸	709.4	698.4†	740.3	784.7⸸	776.8⸸	748.0	787.3†	789.8	909.5	672.2	237.3	25.7	25
798.6	782.8⸸	672.3⸸	706.9	726.0†	742.5†	649.1⸸	759.4†	783.5†	791.5†	785.8	859.8	649.1	210.7	25.6	26
841.8†	780.5	754.6†	729.6	758.1⸸	789.6	811.9†	787.6	800.8⸸	824.9	805.6	938.5	729.6	208.9	25.6	27
785.8	744.6†	779.2⸸	761.7†	752.4	736.4†	776.2⸸	790.1†	789.4	792.0	787.6	826.9	735.7	91.2	25.6	28
813.4	804.5†	805.2	729.4†	781.8⸸	690.0⸸	714.6	702.3	798.5†	782.7	791.3	864.1	690.0	174.1	25.5	29
852.5	809.0†	664.2	529.1⸸	569.5⸸	670.4	631.0	755.9	717.9	858.0†	810.8	985.0	529.1	455.9	25.5	30
811.0	764.4⸸	739.3	698.8⸸	714.7⸸	689.5⸸	710.0†	804.3†	752.2†	696.0†	813.1	931.6	689.5	242.1	25.5	31
800.0	788.0	737.0	737.3	725.8	729.7	724.7	745.9	767.0	794.9	799.5	864.2	724.7	139.5		
836.8	777.8	723.1	669.4†	690.5	770.3	823.2	622.4	728.4	776.7						32

RECOGNITION AND ANALYSIS OF THE DISTURBANCES OF THE MAGNETIC DECLINATION.

In order to conform as closely as practicable to the method of reduction favored by the conference, as expressed by the president of the Commission in Circulars Nos. 39, and 40, and preparatory to the treatment of the disturbances, a collection of the hourly readings of the declination is here given for those days which have been pointed out as generally (as far as known) quiet ones. At Fort Conger the deviations in the readings are so great that it is almost impossible to attempt a selection of undisturbed from disturbed days, particularly in the absence ot any definite rule for doing it. We were obliged to omit the following dates from the list ot quiet days, in consequence ot the great irregularities in the Fort Conger record at these dates pointing to disturbances, viz: 1882, August 3, 21, 23, 24; September 1; October 1; November 4, 10, 11, 29; December 15. 1883, January 2, 23; February 10; May 9, 12; June 4, 5, 15, and July 21, 22, 23, 28, 29.

The final values for each hour are given at the foot of the recapitulation of the six separate results or combinations by pairs of months. In this state they will be found convenient for such further operations as the Commission may choose to adopt.

Hourly values of selected (supposed) undisturbed days, grouped in pairs of months, in accordance with Circulars Nos. 39 and 40.

246° east + minutes of table.

Date.		Göttingen hours. 0	1	2	3	4	5	6	7	8	9	10	11
		′	′	′	′	′	′	′	′	′	′	′	′
1882	Sept. 16	808.6	806.4	810.6	816.9	810.5	805.7	809.1	801.9	790.3	794.3	793.0	801.3
1882	Sept. 24	787.1	783.5	793.1	798.3	803.7	791.2	790.4	799.3	792.2	784.7	788.7	787.1
1882	Sept. 29	797.1	817.7	811.7	812.5	817.1	827.4	824.3	826.7	819.5	819.1	812.3	815.8
	Mean..	797.6	802.5	805.1	809.2	810.4	808.1	807.9	809.3	800.7	799.4	798.0	801.4
1883	Apr. 10	804.3	817.8	817.3	846.0	846.3	823.5	820.0	821.4	810.7	815.9	822.1	816.0
1883	Apr. 14	821.6	829.4	816.0	852.0	867.0	837.7	833.3	830.5	833.1	816.9	822.8	824.2
1883	Apr. 17	828.9	820.4	824.4	819.7	834.7	837.3	851.9	830.9	853.7	796.7	794.7	830.3
1883	Apr. 22	819.2	832.9	824.0	820.7	828.4	826.8	799.4	848.5	820.5	850.5	804.4	793.6
	Mean..	818.5	825.1	820.4	834.6	844.1	831.3	826.2	832.8	829.5	820.0	811.0	816.0
1882	Oct. 19	795.9	786.9	795.9	797.4	794.7	797.1	805.9	806.1	796.3	791.4	794.0	796.1
1882	Oct. 20	798.3	797.4	794.9	796.9	799.4	793.3	802.1	794.0	793.2	794.6	791.3	791.1
1882	Oct. 21	793.6	797.0	797.6	799.0	794.2	798.4	791.5	798.0	797.2	793.0	792.5	789.1
	Mean..	795.9	793.8	796.1	797.8	796.1	796.3	799.8	799.4	795.6	793.0	792.6	792.1
1883	Mar. 11	788.2	826.2	808.4	812.7	806.9	818.6	802.3	805.6	802.6	804.2	813.4	797.7
1883	Mar. 17	817.3	813.7	834.3	820.1	838.7	817.9	807.9	848.3	815.5	824.1	813.5	798.6
1883	Mar. 19	822.4	815.4	813.2	810.1	806.2	809.7	823.4	811.6	810.1	804.3	814.7	804.9
1883	Mar. 20	809.3	804.2	805.9	805.7	825.0	798.8	808.8	805.0	802.9	802.9	800.9	798.9
	Mean..	809.3	814.9	815.4	812.2	819.2	811.2	810.6	817.6	807.8	808.9	810.6	800.0
1882	Nov. —	------	------	------	------	------	------	------	------	------	------	------	------
1883	Feb. 7	816.6	820.4	836.0	818.1	839.2	816.2	830.6	834.9	807.6	815.3	811.6	812.7
1883	Feb. 11	781.8	779.5	782.4	782.4	786.3	782.9	786.9	792.3	790.6	787.5	792.5	790.6
1883	Feb. 12	795.5	793.5	795.9	793.0	797.5	800.0	798.0	802.1	797.1	793.5	795.9	787.4
1883	Feb. 13	814.4	814.1	814.5	813.4	812.5	812.9	816.3	812.1	810.8	814.1	810.1	807.5
	Mean..	802.1	801.9	807.2	801.7	808.9	803.0	808.0	810.4	801.5	802.6	802.5	799.6
1882	Dec. 6	804.1	819.6	823.4	804.8	803.2	799.4	806.6	807.6	815.9	819.3	821.4	811.6
1882	Dec. 8	811.7	824.8	819.9	815.4	813.9	817.0	810.7	811.4	812.2	812.6	812.8	807.9
1882	Dec. 14	787.2	795.7	803.5	804.3	806.2	793.6	798.4	800.8	798.4	792.6	799.3	796.5
	Mean..	801.0	813.4	815.6	808.2	807.8	803.3	805.2	806.6	808.8	808.2	811.2	805.3
1883	Jan. 3	825.0	844.8	840.4	843.9	846.1	831.6	840.8	839.4	846.3	856.5	846.0	840.2
1883	Jan. 11	794.8	809.0	818.8	834.3	826.1	841.7	807.1	806.2	808.7	820.2	814.6	814.2
1883	Jan. 13	801.1	807.0	804.9	807.2	806.3	809.5	807.1	808.3	802.9	806.6	800.6	802.8
	Mean..	807.0	820.3	821.4	828.5	826.2	827.6	818.5	818.0	819.3	827.8	820.4	819.1
1883	May 10	836.6	850.6	820.5	866.6	857.4	846.4	839.4	877.0	826.4	810.6	850.8	806.4
1883	May 11	861.2	853.1	818.1	857.9	842.3	860.2	833.2	861.7	853.7	832.3	844.6	833.6
1883	May 13	843.8	847.5	823.8	842.8	838.6	841.1	835.2	829.5	851.8	840.8	833.0	816.5
	Mean..	847.2	850.4	820.8	855.8	846.1	849.2	835.9	856.1	844.0	827.9	841.8	818.8
1882	Aug. 26	752.2	789.1	801.5	833.2	827.1	794.7	817.7	795.3	796.5	805.0	794.0	806.2
1883	June —	------	------	------	------	------	------	------	------	------	------	------	------
1883	July —	------	------	------	------	------	------	------	------	------	------	------	------

Hourly values of selected (supposed) undisturbed days, grouped in pairs of months, etc.—Continued.

246° east + minutes of table.

Göttingen hours. Noon.	13	14	15	16	17	18	19	20	21	22	23	Mean.	Date.	
′	′	′	′	′	′	′	′	′	′	′	′	′		
798.4	805.1	799.8	798.9	781.3	792.5	800.0	801.3	789.1	803.9	741.6	791.4	798.0	Sept. 16	1882
778.5	772.1	765.0	768.3	763.8	770.5	785.0	776.9	783.8	770.9	769.2	788.7	783.0	Sept. 24	1882
797.1	794.5	772.6	798.3	770.3	740.0	759.4	772.0	782.8	780.3	797.6	795.0	798.4	Sept. 29	1882
791.4	790.6	779.1	788.5	771.8	767.7	781.5	783.4	785.2	785.0	769.5	791.7	793.1	Mean.	
787.0	779.0	783.8	736.1	808.4	811.7	797.7	805.1	828.1	812.2	787.5	802.9	807.5	Apr. 10	1883
823.1	811.9	806.4	807.6	801.3	797.6	799.0	812.7	813.3	821.3	837.8	842.5	823.3	Apr. 14	1883
838.5	799.8	797.0	806.0	814.1	793.5	798.4	787.3	792.2	819.4	836.1	823.3	817.9	Apr. 17	1883
807.6	765.0	773.7	783.7	766.6	750.0	749.7	785.1	803.8	809.0	779.7	798.9	801.7	Apr. 22	1883
814.0	788.9	790.2	783.4	797.6	788.2	786.2	797.6	809.4	815.5	810.3	816.9	812.8	Mean.	
784.0	785.8	791.7	775.5	755.1	733.2	795.9	796.9	795.9	798.0	808.6	795.4	790.6	Oct. 19	1882
785.3	786.7	781.4	774.7	778.0	777.8	780.8	775.1	782.3	797.2	799.9	795.9	790.1	Oct. 20	1882
785.7	781.9	781.7	777.8	773.1	769.0	775.4	783.4	792.0	796.2	792.4	800.4	789.6	Oct. 21	1882
785.0	784.8	784.9	776.0	768.7	760.0	784.0	785.1	790.1	797.1	800.3	797.2	790.1	Mean.	
799.9	769.8	766.2	776.5	776.5	756.7	788.0	775.4	772.9	789.9	798.4	808.5	794.4	Mar. 11	1883
789.3	777.1	776.8	781.7	790.0	778.1	778.8	758.8	787.0	793.5	754.3	819.4	801.4	Mar. 17	1883
790.8	794.8	796.8	796.5	801.5	801.9	788.6	789.2	790.4	790.6	797.2	802.2	803.6	Mar. 19	1883
795.8	794.9	794.6	792.4	789.9	793.5	787.4	791.3	790.7	798.9	799.5	796.8	799.8	Mar. 20	1883
794.0	784.2	783.6	786.8	789.5	782.5	785.7	778.7	785.2	793.2	787.4	806.7	799.8	Mean.	
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807.6	797.9	799.7	806.7	803.2	804.5	782.9	773.3	761.1	771.5	774.7	800.4	805.9	Feb. 7	1883
775.0	775.0	772.9	752.5	728.1	766.4	765.3	779.7	792.3	797.7	796.8	797.5	780.6	Feb. 11	1883
788.3	780.9	784.4	761.3	748.4	773.7	780.7	784.1	797.7	814.9	811.8	818.9	791.4	Feb. 12	1883
805.0	799.5	799.9	798.0	785.0	788.2	802.0	804.3	818.2	821.9	805.9	815.7	808.2	Feb. 13	1883
794.0	788.3	789.2	779.6	766.2	783.2	782.7	785.4	792.3	801.5	797.3	808.1	796.5	Mean.	
809.2	798.0	778.3	786.9	790.8	789.1	767.3	783.0	763.3	768.4	799.0	794.6	798.5	Dec. 6	1882
809.5	797.4	813.8	804.5	804.8	804.4	805.1	804.5	804.5	807.5	806.2	805.5	809.9	Dec. 8	1882
794.8	779.2	790.7	765.3	780.8	797.4	795.8	786.2	792.7	799.9	787.8	790.0	793.2	Dec. 14	1882
804.5	791.5	794.3	785.6	792.1	797.0	789.4	791.2	786.8	791.9	797.7	796.7	800.5	Mean.	
831.7	830.0	820.7	815.5	817.5	827.5	835.5	838.7	838.4	841.4	834.1	845.2	836.5	Jan. 3	1883
809.7	806.4	808.9	810.0	810.1	809.6	799.8	814.1	813.5	814.6	811.4	812.9	813.2	Jan. 11	1883
804.1	808.0	788.6	778.3	789.2	785.2	794.3	815.7	820.8	814.1	813.7	805.7	803.4	Jan. 13	1883
815.2	814.8	806.1	801.3	805.6	807.4	809.9	822.8	824.2	823.4	819.7	821.3	817.7	Mean.	
835.8	823.7	823.6	819.8	816.8	782.9	775.4	772.8	786.6	800.2	829.2	813.5	823.7	May 10	1883
840.2	810.5	807.3	822.7	793.7	808.1	815.1	811.2	811.3	828.1	816.6	834.7	831.3	May 11	1883
815.1	794.6	795.7	813.7	790.9	740.5	756.2	778.1	784.7	768.0	770.9	802.7	810.6	May 13	1883
830.4	809.6	808.9	818.7	800.5	777.2	782.2	787.4	794.2	798.8	805.6	817.0	821.9	Mean.	
797.6	805.0	787.9	779.6	794.0	775.1	793.7	788.7	793.4	798.8	800.9	807.4	797.3	Aug. 26	1882
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Recapitulation of selected (supposed) undisturbed hourly values.

246° east + minutes of table.

Pairs of months.	Göttingen hours.											
	0	1	2	3	4	5	6	7	8	9	10	11
	′	′	′	′	′	′	′	′	′	′	′	′
Sept., 1882, and Apr., 1883	808.0	813.8	812.8	821.9	827.2	819.7	817.0	821.0	815.1	809.7	804.5	808.7
Oct., 1882, and Mar., 1883	802.6	804.4	805.8	805.0	807.6	803.8	805.2	808.5	801.7	801.0	801.6	796.0
Nov., 1882, and Feb., 1883	802.1	801.9	807.2	801.7	808.9	803.0	808.0	810.4	801.5	802.6	802.5	799.6
Dec., 1882, and Jan., 1883	804.0	816.8	818.5	818.4	817.0	815.4	811.4	812.3	814.0	818.0	815.8	812.2
May, 1883, and Aug., 1882	799.7	819.8	811.2	844.5	836.6	822.0	826.8	825.7	820.2	816.4	817.9	813.0
June, 1883, and July, 1883	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
Final means	803.3	811.3	811.1	818.3	819.5	812.8	813.7	815.6	810.5	809.5	808.5	805.9

Recapitulation of selected (supposed) undisturbed hourly values—Continued.

246° east + minutes of table.

Göttingen hours.												Daily mean.	Pairs of months.
Noon.	13	14	15	16	17	18	19	20	21	22	23		
′	′	′	′	′	′	′	′	′	′	′	′	′	
802.7	789.8	784.6	786.0	784.7	778.0	783.8	790.5	797.3	800.2	789.9	804.3	803.0	Sept., 1882, and Apr., 1883
789.5	784.5	784.2	781.4	779.1	771.2	784.8	781.9	787.6	795.2	793.8	802.0	794.9	Oct., 1882, and Mar., 1883
794.0	788.3	789.2	779.6	766.2	783.2	782.7	785.4	792.3	801.5	797.3	808.1	796.5	Nov., 1882, and Feb., 1883
809.8	803.2	800.2	793.4	798.8	802.2	799.6	807.0	805.5	807.6	808.7	809.0	809.1	Dec., 1882, and Jan., 1883
814.0	807.3	798.4	799.2	797.2	776.2	788.0	788.0	793.8	798.8	803.2	812.2	809.6	May, 1883, and Aug., 1882
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	June, 1883, and July, 1883
802.0	794.6	791.3	787.9	785.2	782.2	787.8	790.6	795.3	800.1	798.6	807.1	802.6	Final means.

REDUCTION AND DISCUSSION OF THE OBSERVATIONS FOR MAGNETIC DECLINATION BETWEEN JULY, 1882, AND AUGUST, 1883.

The subject of the treatment of the magnetic record, so far as it relates to the separation of the so-called disturbances from the general body of the observations, appears finally to have been left by the Vienna conference to the discretion of each individual party. Several methods were proposed and considered, but it does not appear that any binding agreement was reached, and subsequent circulars only contain some further suggestions. Whatever method may be adopted it must contain some arbitrary step so long as there is no certain known criterion for a disturbance other than its magnitude, and there remains the difficulty of selecting a method that shall be equally well adapted to stations widely separated, geographically as well as magnetically, the latter with respect to the magnitude of the dip and to the intensity of the horizontal component of the force.

Having already expressed my views respecting the management of the disturbances in connection with the reduction of the magnetic work at Point Barrow,* all that is required here is to state the method followed and to point out how the normal or undisturbed monthly mean values for each hour were obtained; the difference of each observation from its respective normal value will form the basis for further discussion.

In the first place new tables of hourly differences were formed from the preceding ones by subtracting the monthly mean value, as given there, from each individual value in that column. From these differences was deduced the mean deviation m of any single observation, viz, $m = \sqrt{\frac{[vv]}{n-1}}$ or from the more simple form $m = \frac{1.253[v}{\sqrt{n^2 - n}}$ which for the values of n equal to 29, 30, and 31, equals very nearly $m = \frac{1.253[v}{n - 0.5}$ A comparison† of the resulting m when derived from the sum of the squares of differences, and when derived from the sum of differences without regard to sign, proved that the latter more simple form was perfectly satisfactory, and it was consequently used exclusively.

The values of m so found are collected in the following table:

*Report of the International Polar Expedition to Point Barrow, Alaska (Lieut. P. H. Ray, commanding), Washington, 1885, Part VI., pp. 48[illegible]–482. At the date of this report, May 6, 1884, the Vienna resolutions were unknown, and the discussion was consequently broken off with the intention to resume it when an agreement should have been reached. It is to be regretted that so far no means have since been provided either to put the record in [illegible] shape desired or to complete the discussion.—C. A. SCHOTT.

†Comparison of values of m, as found by squaring and by summation, for July, 1882:

Göttingen hour.	From [vv]	From [v]	Göttingen hour.	From [vv]	From [v
	′	′		′	′
0	±43	±42	13	61	48
1	52	45	14	49	43
2	54	47	15	57	53
3	38	39	16	57	53
4	37	35	17	59	60
5	72	55	18	61	57
6	45	48	19	57	56
7	52	53	20	57	59
8	46	50	21	68	66
9	64	56	22	70	64
10	62	63	23	65	65
11	55	57			
Noon.	62	58	Mean....	±56	±53

The larger differences for 5^h and 13^h arise in each case from one excessive value in the series, but it does not follow from this that the larger value is the better one.

Table of values of m, or of the mean deviation of an observed declination as compared with the respective monthly mean for that hour.

Date.	Hours.													
	*0 †19	1 20	2 21	3 22	4 23	5 0	6 1	7 2	8 3	9 4	10 5	11 6	Noon. 7	13 8
1882.	′	′	′	′	′	′	′	′	′	′	′	′	′	′
July	±42	±45	±47	±39	±35	±55	±48	±53	±50	±56	±63	±57	±58	±48
August	40	24	33	34	34	46	44	41	47	46	48	47	39	39
September	25	20	21	20	35	26	33	26	28	25	25	24	22	21
October	37	38	44	42	47	51	56	56	50	50	35	47	49	66
November	52	75	75	72	88	97	102	92	69	76	80	74	103	56
December	31	36	41	39	43	45	44	46	44	45	41	35	41	33
1883.														
January	52	45	44	39	48	45	51	43	47	47	47	47	52	53
February	20	26	19	37	28	27	28	28	28	29	23	16	16	16
March	17	21	22	29	30	23	39	33	30	26	25	22	27	24
April	42	28	34	30	27	34	36	34	29	35	49	31	28	38
May	42	29	25	31	36	33	29	42	46	42	36	34	27	33
June	34	22	39	41	52	33	30	60	55	51	59	57	46	47
July	42	49	36	38	44	49	57	42	66	53	65	61	53	37
Mean	36	±34	±36	±38	±43	±42	±46	±45	±45	±44	±44	±41	±42	±39

* Göttingen hours. † Local hours (+ $1^m.2$ for local time).

Table of values of m, or of the mean deviation of an observed declination, as compared with the respective monthly mean for that hour—Continued.

Hours. *14 †9	15 10	16 11	17 Noon.	18 13	19 14	20 15	21 16	22 17	23 18	Monthly mean.	Date.
′	′	′	′	′	′	′	′	′	′	′	1882.
±43	±53	±53	±60	±57	±56	±59	±66	±64	±65	±53	July.
33	40	42	71	54	53	61	45	31	29	43	August.
26	27	29	37	38	36	41	41	26	20	28	September.
63	56	55	55	50	49	57	50	30	31	48	October.
89	92	125	80	99	84	80	69	82	55	82	November.
46	48	47	47	47	31	42	42	42	39	41	December.
											1883.
43	61	49	58	51	57	59	44	53	50	49	January.
24	43	59	60	60	67	31	34	33	24	32	February.
53	31	42	33	37	32	41	34	33	21	30	March.
37	37	38	44	56	73	50	54	55	43	40	April.
37	34	36	44	32	37	54	39	43	35	36	May.
35	36	44	54	48	37	45	49	43	39	44	June.
36	54	58	56	61	57	65	56	54	55	52	July.
±44	±47	±52	±53	±53	±51	±52	±46	±44	±37	±44	Mean.

*Göttingen hours. †Local hours (+1m.2 for local time).

According to Dr. Lloyd a deviation of one and a half times the mean deviation from the respective hourly normal may be regarded to designate an observation as a disturbance; hence at Fort Conger a deviation of 1° 06′ may be considered as indicating a disturbance. Were we to adopt Peirce's criterion for the rejection of anomalous values (that is those *not* conforming to the law of facility of committing errors as assumed in the theory of the method of least squares) the limit of rejection or separation would be widened to 2.4 times m, or to 1° 46′. Sir Edward Sabine's limit was generally in closer accord with Dr. Lloyd's rule than with Peirce's, as he was anxious to secure a sufficient number of separated values for further discussion. Adopting here the limit 1° 06′ any observation differing by this or by any greater amount from the mean declination reading at the same hour, and in the same month, is regarded as bringing it within the category of "large disturbances. Fresh monthly means for each hour were then taken, omitting the larger disturbances so designated, and the process of limitation was repeated until the finally adopted monthly means now designated monthly "normals" remained after all observations, differing 1° 06′ or more from their respective normals, had thus been excluded.

The value of m might have been derived in a much less laborious manner by a selection of evenly distributed hours over the months of the year; thus it could be satisfactorily evaluated from 24 instead of 288 hours, as above, by using the hours 0 and 1 in the first month, the hours 2 and 3 in the second, the hours 4 and 5 in the next, and so on. The value of m thus found is $\pm 44'$; even the use of 12 hours, systematically distributed, would suffice: thus employing the even hours 0, 2, 4, 6, etc., for the 1st, 2d, 3d, etc., month respectively we find $m = \pm 45'$, and by the odd hours we should get $m = \pm 43'$.

The above mean values of m exhibit (in magnitude) the diurnal disturbance variation. It is greatest about the (local) hours 11, noon, 13, 14, 15, and least about the hours 19, 20, and 21, with a secondary maximum about the hours 1 or 2.

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Monthly means of the hourly values of the declination at Fort Conger, August 1, 1882, *to August* 1, 1883.

246° east + tabular minutes.

Year.	Month.	Göttingen hours.												
		0	1	2	3	4	5	6	7	8	9	10	11	Noon.
		′	′	′	′	′	′	′	′	′	′	′	′	′
1882	August	797.7	819.3	827.4	832.6	845.5	854.5	858.8	842.3	842.2	833.6	845.6	825.6	828.6
"	September	804.3	812.4	815.0	820.9	832.1	824.2	828.1	819.9	816.7	814.9	803.8	809.5	803.3
"	October	802.0	809.6	820.4	817.4	822.5	825.6	827.2	825.6	818.8	813.3	807.9	805.3	795.9
"	November	810.3	834.3	827.3	848.7	876.7	866.1	866.8	863.3	851.9	848.3	844.3	833.3	806.9
"	December	812.5	817.4	815.3	829.2	828.8	834.8	828.1	831.9	831.4	833.1	828.9	818.1	812.4
1883	January	836.7	830.8	835.7	836.9	851.8	848.2	849.5	844.6	846.2	845.2	841.2	838.4	839.0
"	February	804.7	812.9	815.2	821.3	822.4	819.7	826.2	821.0	821.1	822.5	816.5	806.8	801.5
"	March	804.1	809.4	825.6	835.0	835.4	837.3	847.5	845.3	836.8	827.2	820.5	818.0	799.9
"	April	821.9	825.4	840.0	845.9	844.9	850.9	848.7	850.9	840.7	840.8	844.0	830.1	819.4
"	May	800.8	827.0	821.7	831.9	837.7	849.0	840.1	857.2	841.0	843.4	838.3	833.7	821.4
"	June	802.8	818.7	840.3	837.3	853.6	838.7	854.3	856.5	850.5	849.6	834.0	840.2	825.5
"	July	808.9	809.0	813.8	838.4	841.1	849.4	854.7	839.8	864.2	844.7	835.3	826.5	811.3
Annual mean		808.9	818.8	824.8	833.0	841.0	841.5	844.2	841.5	838.5	834.7	830.0	823.8	813.8

Monthly values of the hourly normals of the declination at Fort Conger, August 1, 1882, *to August* 1, 1883.

246° east + tabular minutes.

Year.	Month.	Göttingen hours.												
		0	1	2	3	4	5	6	7	8	9	10	11	Noon.
		′	′	′	′	′	′	′	′	′	′	′	′	′
1882	August	810	819	821	830	838	846	845	833	843	833	835	831	834
"	September	800	810	815	821	822	821	828	820	817	815	804	810	800
"	October	798	807	815	812	822	821	820	818	820	809	804	796	786
"	November	798	810	816	824	837	825	816	821	815	814	803	790	791
"	December	802	806	810	813	811	815	812	814	816	815	812	805	803
1883	January	824	823	833	830	837	833	825	828	830	830	825	825	822
"	February	805	805	812	808	817	815	822	812	817	819	816	807	802
"	March	804	809	826	832	827	837	838	840	837	827	820	816	801
"	April	811	826	831	841	839	845	839	850	838	839	828	829	813
"	May	809	824	822	830	833	847	839	850	844	847	846	838	826
"	June	805	819	825	832	841	836	852	826	840	840	834	822	822
"	July	805	818	809	829	824	828	836	831	850	844	869	830	820
Annual mean		806	815	820	825	829	831	831	829	831	828	825	816	810
		h. m.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*
Local mean time		19 01.2	20 01.2	21 01.2	22 01.2	23 01.2	0 01.2	1 01.2	2 01.2	3 01.2	4 01.2	5 01.2	6 01.2	7 01.2

Monthly means of the hourly values of the declination at Fort Conger, August 1, 1882, *to August* 1, 1883—Continued.

246° east + tabular minutes.

Göttingen hours. 13	14	15	16	17	18	19	20	21	22	23	Mean.	Month.	Year.
′	′	′	′	′	′	′	′	′	′	′	′		
804.6	790.7	774.5	762.8	730.9	741.9	747.3	756.8	762.5	789.2	792.5	804.5	August	1882
790.8	787.2	770.5	769.1	761.4	760.1	755.5	761.9	759.0	775.4	795.0	795.5	September	"
795.0	767.5	769.1	764.8	762.7	755.1	753.3	753.7	760.6	789.3	801.2	794.3	October	"
800.7	808.8	770.0	743.2	775.4	717.6	737.0	747.8	789.9	817.5	813.2	812.3	November	"
805.8	803.7	791.3	796.3	795.6	783.4	787.3	785.8	795.2	797.1	807.6	811.3	December	"
828.3	816.8	812.8	813.5	798.9	801.6	793.3	787.3	805.0	808.5	825.2	826.5	January	1883
790.0	780.6	768.1	748.0	744.6	752.9	745.8	775.7	773.9	774.6	792.5	794.1	February	"
796.9	768.1	778.5	762.4	763.1	761.0	754.1	765.8	771.5	782.8	801.0	802.0	March	"
816.9	796.5	790.2	779.7	775.9	764.3	751.9	776.6	780.3	797.0	807.0	814.2	April	"
803.6	796.4	788.0	773.6	760.5	756.7	757.5	756.3	774.5	780.5	794.2	807.7	May	"
824.0	801.3	783.1	756.7	738.7	731.7	746.9	725.4	741.9	753.7	795.3	804.2	June	"
799.5	800.0	788.0	737.0	737.3	725.8	729.7	724.7	745.9	767.0	794.9	799.5	July	"
804.7	793.1	782.0	767.3	762.1	754.3	755.0	759.8	771.7	786.0	801.6	805.5	{ = 259° 25.5′ E., or 100° 34.5′ W.	

Monthly values of the hourly normals of the declination at Fort Conger, August 1, 1882, *to August* 1, 1883—Continued.

246° east + tabular minutes.

Göttingen hours. 13	14	15	16	17	18	19	20	21	22	23	Mean.	Month.	Year.
′	′	′	′	′	′	′	′	′	′	′	′		
806	794	775	767	758	762	748	769	780	787	795	806.5	August	1882
788	790	778	777	773	768	767	772	770	775	795	797.3	September	"
772	767	764	754	751	765	762	774	776	789	801	791.8	October	"
775	794	768	741	748	770	771	780	807	786	806	796.1	November	"
799	788	788	787	790	793	787	792	802	799	793	802.2	December	"
807	809	799	803	793	784	783	795	[illegible]	801	816	814.8	January	1883
793	784	778	769	773	784	776	781	778	786	795	798.1	February	"
802	790	789	778	766	774	759	777	777	788	801	804.8	March	"
806	798	792	788	781	780	781	783	790	803	813	814.3	April	"
813	803	790	776	760	757	761	764	785	787	795	810.2	May	"
812	795	788	760	747	744	749	723	744	761	792	800.4	June	"
802	808	771	758	750	741	745	754	758	759	791	801.2	July	"
798	793	782	772	766	768	766	772	781	785	799	803.2	{ = 259° 23.2′ E., or 100° 36.8′ W.	
h. m. 8 01.2	*h. m.* 9 01.2	*h. m.* 10 01.2	*h. m.* 11 01.2	Noon +1.2m	*h. m.* 13 01.2	*h. m.* 14 01.2	*h. m.* 15 01.2	*h. m.* 16 01.2	*h. m.* 17 01.2	*h. m.* 18 01.2	......	Local mean time.	

Solar diurnal variation of the declination after the separation of the larger disturbances.

Year.	Month.	Local mean time.												
		h. m. 19+1.2	*h. m.* 20+1.2	*h. m.* 21+1.2	*h. m.* 22+1.2	*h. m.* 23+1.2	Midn't. $+1^m$ 2	*h. m.* 1+1.2	*h. m.* 2+1.2	*h. m.* 3+1.2	*h. m.* 4+1.2	*h. m.* 5+1.2	*h. m.* 6+1.2	*h. m.* 7+1.2
		′	′	′	′	′	′	′	′	′	′	′	′	′
1882	August	+4	+13	+15	+24	+32	+40	+39	+27	+37	+27	+29	+25	+28
"	September	+3	+13	+18	+24	+25	+24	+31	+23	+20	+18	+ 7	+13	+ 3
"	October	+6	+15	+23	+20	+30	+29	+28	+26	+28	+18	+12	+ 4	− 6
"	November	+2	+14	+20	+28	+41	+29	+20	+25	+19	+18	+ 7	− 6	− 5
"	December	0	+ 4	+ 8	+11	+ 9	+13	+10	+12	+14	+13	+10	+ 3	+ 1
1883	January	+9	+ 8	+18	+15	+22	+18	+10	+13	+15	+15	+10	+10	+ 7
"	February	+7	+ 7	+14	+10	+19	+17	+24	+14	+19	+21	+18	+ 9	+ 4
"	March	−1	+ 4	+21	+27	+22	+32	+33	+35	+32	+22	+15	+11	− 4
"	April	−3	+12	+17	+27	+25	+31	+25	+36	+24	+25	+14	+15	− 1
"	May	−1	+14	+12	+20	+23	+37	+29	+40	+34	+37	+36	+28	+16
"	June	+5	+19	+25	+32	+41	+36	+52	+26	+40	+40	+34	+22	+22
"	July	+4	+17	+ 8	+28	+23	+27	+35	+30	+49	+43	+68	+29	+19
*6 months	April to September, inclusive.	+2	+15	+16	+26	+28	+32	+35	+30	+34	+32	+31	+22	+14
†6 months	October to March, inclusive.	+4	+ 9	+17	+18	+24	+23	+21	+21	+21	+18	+12	+ 5	0
‡Year		+3	+12	+17	+22	+26	+28	+28	+26	+28	+25	+22	+14	+ 7

*Semi-annual mean, ⊙ in north declination. †Semi-annual mean, ⊙ in south declination. ‡Annual mean.

Solar diurnal variation of the declination after the separation of the larger disturbances—Continued.

Local mean time.											Month.	Year.
h. m. 8+1.2	*h. m.* 9+1.2	*h. m.* 10+1.2	*h. m.* 11+1.2	Noon. $+1^m.2$	*h. m.* 13+1.2	*h. m.* 14+1.2	*h. m.* 15+1.3	*h. m.* 16+1.2	*h. m.* 17+1.2	*h. m.* 18+1.2		
′	′	′	′	′	′	′	′	′	′	′		
0	−12	−31	−39	−48	−44	−58	−37	−26	−19	−11	August	1882
− 9	− 7	−19	−20	−24	−29	−30	−25	−27	−22	− 2	September	"
−20	−25	−28	−38	−41	−27	−30	−18	−16	− 3	+ 9	October	"
−21	− 2	−28	−55	−48	−26	−25	−16	+11	−10	+10	November	"
− 3	−14	−14	−15	−12	− 9	−15	−10	0	− 3	− 9	December	"
− 8	− 6	−16	−12	−22	−31	−32	−20	−13	−14	+ 1	January	1883
− 5	−14	−20	−29	−25	−14	−22	−17	−20	−12	− 3	February	"
− 3	−15	−16	−27	−39	−31	−46	−28	−28	−17	− 4	March	"
− 8	−16	−22	−26	−33	−34	−33	−31	−24	−11	− 1	April	"
+ 3	− 7	−20	−34	−50	−53	−49	−46	−25	−23	−15	May	"
+12	− 5	−12	−40	−53	−56	−51	−77	−56	−39	− 8	June	"
+ 1	+ 7	−30	−43	−51	−60	−56	−47	−43	−42	−10	July	"
0	− 7	−22	−34	−43	−46	−46	−44	−34	−26	− 8	April to September, inclusive.	6 months.*
−10	−13	−20	−29	−31	−23	−28	−18	−11	−10	+ 1	October to March, inclusive.	6 months.†
− 5	−10	−21	−32	−37	−35	−37	−31	−22	−18	− 4	----------	Year.‡

*Semi-annual mean, ⊙ in north declination. †Semi-annual mean, ⊙ in south declination. ‡Annual me[illegible].

Of the three tables of hourly values just given the first is made up from the hourly mean values given at the foot of each monthly table of the observed hourly declinations. These monthly means, when collected for the period August, 1882, to August (exclusive), 1883, give the annual mean readings for each hour of the day, as well as the mean of all observations, or 259° 25'.5 east (100° 34'.5 west). This average declination is preferable to 100° 13'.6 west, as found for the preceding year from thirty-six days of observations; hence we adopt as the best value of the annual diminution of west declination (between 1876 and 1883) the value $\frac{73'.0}{7.4} = 9'.87$.

The second table contains the hourly normals, or the hourly mean values of all observations of that hour which remained after the exclusion of the larger disturbed observations. It also gives the annual means of the hourly normals, and shows that the exclusion of the larger disturbances changed the resulting declination to 100° 36'.8 west. Thus the effect of the presence of these disturbances was to diminish the declination by 2'.3. In the preceding year the effect was only 0'.8, but in the same direction. The diurnal range is increased in both years, owing to the influence of the disturbances.

In the third table the solar-diurnal variation of the declination is presented. It is simply the difference between each hourly normal and its respective monthly mean. A + sign indicates greater east (less west) and a — sign less east (greater west) declination than the monthly average. The semi-annual means for sun in north declination and for sun in south declination are given, as well as the annual mean. The difference for the respective hours in the semi-annual means constitutes the annual inequality at these hours. The solar-diurnal variation is also graphically shown on the accompanying plate, and is further expressed by means of a periodic function—

$$d = A + B_1 \sin(\alpha + \gamma_1) + B_2 \sin(2\alpha + \gamma_2) + B_3 \sin(3\alpha + \gamma_3) + \text{etc., viz:}$$

$$d = 32'.96 \sin(\alpha + 72^\circ\ 17') + 5'.00 \sin(2\alpha + 242^\circ\ 52') + 0'.26 \sin(3\alpha + 156^\circ) + \ldots.$$

the angle α counting from the epoch midnight + 1.2^m, at the rate of 15° an hour; counting α from midnight the angles γ_1, γ_2, γ_3 would have to be changed to 71° 59', 242° 16', and 155°, respectively. The observed and computed values compare as follows:

Local time.	By observation.	By computation.	Local time.	By observation.	By computation.
h. m.	'	'	h. m.	'	'
0 01.2	+28	+27	Noon +1.2	−37	−36
1 01.2	+28	+28	13+1.2	−35	−38
2 01.2	+26	+28	14+1.2	−37	−36
3 01.2	+28	+27	15+1.2	−31	−31
4 01.2	+25	+25	16+1.2	−22	−24
5 01.2	+22	+21	17+1.2	−18	−15
6 01.2	+14	+15	18+1.2	− 4	− 6
7 01.2	+ 7	+ 7	19+1.2	+ 3	+ 3
8 01.2	− 5	− 3	20+1.2	+12	+11
9 01.2	−10	−13	21+1.2	+17	+18
10 01.2	−21	−22	22+1.2	+22	+22
11 01.2	−32	−31	23+1.2	+26	+25

The most characteristic feature of the solar-diurnal variation is the westerly extreme soon after local noon. By the above formula we find its epoch to be $13^h\ 2^m$, and its deflection from the normal declination 37'.9; in summer it occurs about half an hour later and in winter about a quarter of an hour earlier. The easterly extreme is found to occur at $1^h\ 27^m$, the deflection being 27'.9; during the half year including summer it appears to take place a little later and in the half year including winter a little earlier.

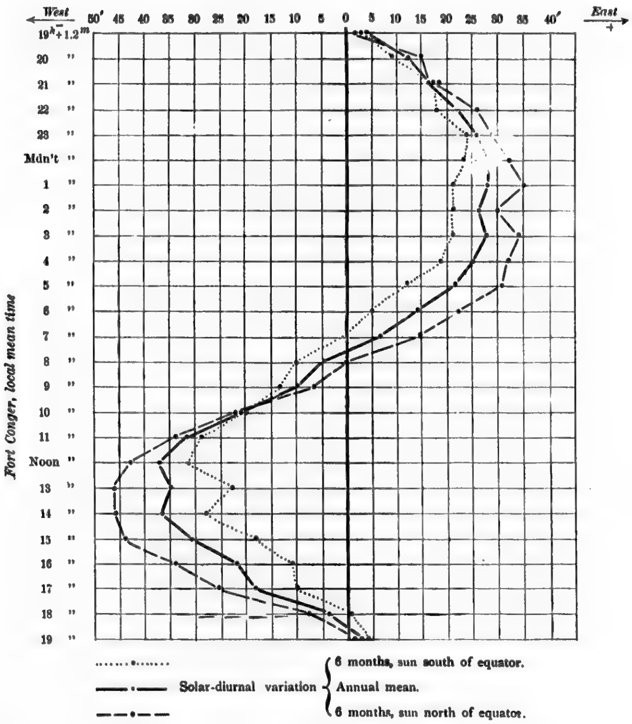
Superior range of diurnal variation, April to September, inclusive	1° 22'
Yearly average range	1 06
Inferior range, October to March, inclusive	0 56

The annual variation in the diurnal range is exhibited in the following monthly averages, which were derived graphically from the last table:

1882.	'	1883.	'
August	96	February	51
September	58	March	77
October	70	April	67
November	85	May	91
December	28	June	108
1883.		July	106
January	52		

Solar-diurnal Variation of the Magnetic Declination at Fort Conger, Aug., 1882, to Aug., 1883.

(After exclusion of the larger disturbances.)



The range for December, only 28′, is most remarkable; the other extreme occurs half a year later, in June, with 1° 48′, which is nearly four times the minimum amount. These ranges, which depend on the hourly normals, are necessarily smaller than the absolute ranges, which would include all disturbances, large and small. These larger diurnal ranges have already been given at the foot of the monthly tables of the hourly record.

It appears to be a peculiarity of this region to have the extremes of the diurnal variation nearly twelve hours apart, and to have them follow midnight and noon within about one hour. The daily average is reached at $7^h\ 45^m$ and at $18^h\ 39^m$, nearly, and about half an hour earlier during the half year when the sun is in south declination, and about one-third of an hour later during the other half year.

The extremes of the declination in the hourly series at Fort Conger were observed as follows:

1882, November 20, $1^h\ 1^m$ (local time)	266° 41′.4 east (93° 18′.6 W.)
And on the same day, at $7^h\ 0^m$ (local time)	248° 46′.6 east (111° 13′.4 W.)
Total range observed	17° 54′.8

Absolute extremes:

We learn from the narrative, Vol. II, p. 8, that the *lowest* reading of the record was on November 16, 1882,* at $8^h\ 35^m$ a. m., Göttingen time, when the declination was 92° 51′.6 W.; and that on the day following, at $10^h\ 20^m$ p. m., Greenwich time, there was the highest reading, viz, 113° 19′.8 W., a change to the westward of 20° 28′.2 in thirty-eight hours (and a half).

THE LARGER DISTURBANCES IN DECLINATION AT FORT CONGER DURING THE YEAR, AUGUST, 1882, TO AUGUST, 1883.

The total number of hourly observations during the year was 8749, and with our limit the total number of so-called disturbances is 1169, which gives about one largely-disturbed observation in every eight. The distribution of the disturbed values in the diurnal and annual periods, with separation of the easterly and the westerly disturbances and further analysis with respect to frequency and to magnitude, is contained in the following four tables:

* See notes on auroral displays, near the end of this paper. The great magnetic storm between November 13 and November 19, 1882, culminated in intensity on the 17th.

Disturbances of the declination at Fort Conger, August, 1882, to August, 1883.

Number and distribution of the larger *easterly* disturbances.

Year.	Month.	Local mean time.												
		h. m. 19 1.2	h. m. 20 1.2	h. m. 21 1.2	h. m. 22 1.2	h. m. 23 1.2	Midn't +1.2^m	h. m. 1 1.2	h. m. 2 1.2	h. m. 3 1.2	h. m. 4 1.2	h. m. 5 1.2	h. m. 6 1.2	h. m. 7 1.2
1882	August	0	0	2	2	3	3	5	3	2	2	4	1	1
"	September	1	1	0	0	2	1	0	0	0	0	0	0	1
"	October	1	1	2	2	1	2	4	3	3	2	1	2	3
"	November	7	7	6	6	7	8	10	9	11	8	10	10	8
"	December	4	5	4	5	5	6	5	6	5	5	5	4	5
1883	January	3	2	2	3	4	4	8	5	4	4	4	3	4
"	February	0	2	1	2	1	2	1	3	1	1	0	0	0
"	March	0	0	0	1	3	0	3	2	0	0	1	1	1
"	April	4	2	3	2	2	2	3	2	1	1	2	1	2
"	May	0	1	0	1	3	2	1	4	1	1	1	0	0
"	June	0	0	5	3	4	2	1	8	5	4	3	6	2
"	July	2	2	2	3	5	6	7	3	8	2	0	3	2
Hourly sums		22	23	27	30	40	38	48	48	41	30	31	31	29

Aggregate amount of the larger *easterly* disturbances.

Year.	Month.	Local mean time.												
		h. m. 19 1.2	h. m. 20 1.2	h. m. 21 1.2	h. m. 22 1.2	h. m. 23 1.2	Midn't +1.2^m	h. m. 1 1.2	h. m. 2 1.2	h. m. 3 1.2	h. m. 4 1.2	h. m. 5 1.2	h. m. 6 1.2	h. m. 7 1.2
		′	′	′	′	′	′	′	′	′	′	′	′	′
1882	August	0	0	207	143	229	266	429	282	131	166	387	70	79
"	September	130	86	0	0	274	92	0	0	0	0	0	0	93
"	October	264	253	345	360	237	326	467	481	378	403	234	426	494
"	November	592	973	705	829	1 256	1 345	1 713	1 449	1 185	1 115	1 320	1 287	1 221
"	December	336	424	365	504	564	597	503	563	476	578	528	397	462
1883	January	532	330	213	303	467	457	769	523	488	479	502	413	529
"	February	0	219	83	368	160	138	108	257	109	119	0	0	0
"	March	0	0	0	99	259	0	290	152	0	0	85	74	91
"	April	406	159	270	163	186	178	301	167	89	117	472	114	192
"	May	0	85	0	66	236	142	127	303	80	98	74	0	0
"	June	0	0	463	200	495	158	74	918	498	389	326	634	266
"	July	263	166	158	301	523	676	710	265	752	263	0	422	147
Hourly sums		2 523	2 695	2 809	3 396	4 886	4 375	5 491	5 360	4 186	3 727	3 928	3 837	3 574
Average magnitude		115	117	104	113	122	115	114	112	102	124	127	124	123

Disturbances of the declination at Fort Conger, August, 1882, *to August,* 1883—Continued.

Number and distribution of the larger *easterly* disturbances—Continued.

Local mean time.											Sum.	Month.	Year.
h. m. 8 1.2	h. m. 9 1.2	h. m. 10 1.2	h. m. 11 1.2	Noon +1.2^m	h. m. 13 1.2	h. m. 14 1.2	h. m. 15 1.2	h. m. 16 1.2	h. m. 17 1.2	h. m. 18 1.2			
2	1	1	1	1	0	3	1	0	1	0	39	August	1882
1	0	1	0	0	0	0	0	0	0	0	8	September	"
4	2	2	3	3	1	1	1	1	1	0	46	October	"
6	7	7	9	9	0	2	2	3	7	5	164	November	"
2	5	4	4	4	1	1	2	2	3	5	97	December	"
5	3	4	3	3	4	3	2	2	3	2	84	January	1883
0	0	0	0	0	1	1	0	1	0	0	17	February	"
0	0	0	0	1	0	0	0	0	0	0	13	March	"
2	1	1	0	1	1	1	1	1	2	1	39	April	"
0	0	0	0	2	0	0	2	0	1	1	21	May	"
4	2	1	1	2	1	1	4	2	2	2	65	June	"
1	0	5	1	1	3	1	1	2	4	4	68	July	"
27	21	26	22	27	12	14	16	14	24	20	661	Hourly sums.	

Aggregate amount of the larger *easterly* disturbances—Continued.

Local mean time.											Σ	Average month.	Month.	Year.
h. m. 8 1.2	h. m. 9 1.2	h. m. 10 1.2	h. m. 11 1.2	Noon +1.2^m	h. m. 13 1.2	h. m. 14 1.2	h. m. 15 1.2	h. m. 16 1.2	h. m. 17 1.2	h. m. 18 1.2				
′	′	′	′	′	′	′	′	′	′	′	′	′		
162	101	75	85	69	0	235	205	0	71	0	3 392	87	August	1882
70	0	66	0	0	0	0	0	0	0	0	811	101	September	"
779	399	424	524	483	92	66	76	73	80	0	7 664	167	October	"
771	1 038	859	1 291	1 093	0	160	176	297	1 089	437	22 201	135	November	"
201	558	395	507	454	123	173	148	144	226	445	9 671	100	December	"
663	393	665	485	466	525	435	320	298	420	379	11 054	132	January	1883
0	0	0	0	0	73	72	0	69	0	0	1 775	104	February	"
0	0	0	0	70	0	0	0	0	0	0	1 120	86	March	"
330	132	112	0	131	179	146	189	170	252	127	4 582	117	April	"
0	0	0	0	156	0	0	174	0	75	73	1 689	80	May	"
421	192	69	77	161	71	67	345	240	136	198	6 458	99	June	"
85	0	623	108	90	234	130	73	189	422	387	6 987	103	July	"
3 482	2 813	3 288	3 077	3 173	1 297	1 484	1 706	1 480	2 771	2 046	77 404	117	Hourly sums.	
129	134	126	140	118	108	106	107	106	115	102			Average magnitude	

Disturbances of the declination at Fort Conger, August, 1882, to August, 1883.

Number and distribution of the larger *westerly* disturbances.

Year.	Month.	Local mean time.												
		h. m. 19 1.2	*h. m.* 20 1.2	*h. m.* 21 1.2	*h. m.* 22 1.2	*h. m.* 23 1.2	Midn't $+1.2^m$	*h. m.* 1 1.2	*h. m.* 2 1.2	*h. m.* 3 1.2	*h. m.* 4 1.2	*h. m.* 5 1.2	*h. m.* 6 1.2	*h. m.* 7 1.2
1882	August	2	0	0	1	0	0	0	0	2	2	1	3	3
"	September	0	0	0	0	0	0	0	0	0	0	0	0	0
"	October	2	2	2	2	2	2	3	3	3	3	1	2	2
"	November	2	3	1	1	1	1	2	2	1	1	1	0	2
"	December	0	1	1	0	0	0	0	0	0	0	0	0	1
1883	January	1	1	1	1	0	0	0	0	0	0	0	0	0
"	February	0	0	0	0	0	0	0	0	0	0	0	0	0
"	March	0	0	0	0	0	0	0	0	0	0	1	0	1
"	April	1	2	0	0	0	0	0	1	0	1	0	1	0
"	May	3	0	0	0	1	1	1	1	2	2	4	2	2
"	June	1	0	0	1	1	1	0	0	2	1	3	1	2
"	July	2	4	0	0	0	0	1	0	3	3	10	6	3
Hourly sums		14	13	5	6	5	5	7	7	13	13	21	15	16

Aggregate amount of the larger *westerly* disturbances.

Year.	Month.	Local mean time.												
		h. m. 19 1.2	*h. m.* 20 1.2	*h. m.* 21 1.2	*h. m.* 22 1.2	*h. m.* 23 1.2	Midn't $+1.2^m$	*h. m.* 1 1.2	*h. m.* 2 1.2	*h. m.* 3 1.2	*h. m.* 4 1.2	*h. m.* 5 1.2	*h. m.* 6 1.2	*h. m.* 7 1.2
		′	′	′	′	′	′	′	′	′	′	′	′	′
1882	August	374	0	0	74	0	0	0	0	153	143	68	236	244
"	September	0	0	0	0	0	0	0	0	0	0	0	0	0
"	October	146	171	175	183	209	189	238	243	305	281	111	147	177
"	November	239	237	356	91	68	103	184	174	84	92	81	0	748
"	December	0	73	200	0	0	0	0	0	0	0	0	0	80
1883	January	135	93	133	90	0	0	0	0	0	0	0	0	0
"	February	0	0	0	0	0	0	0	0	0	0	0	0	0
"	March	0	0	0	0	0	0	0	0	0	0	70	0	122
"	April	69	174	0	0	0	0	0	147	0	69	0	69	0
"	May	257	0	0	0	77	88	98	75	170	195	304	146	154
"	June	79	0	0	95	112	72	0	0	166	88	330	78	155
"	July	151	438	0	0	0	0	131	0	300	245	1 055	536	427
Hourly sums		1 450	1 186	864	533	466	452	651	639	1 178	1 113	2 019	1 212	2 107
Average magnitude		104	91	173	89	93	90	93	91	91	86	96	81	132

Disturbances of the declination at Fort Conger, August, 1882, to August, 1883—Continued.

Number and distribution of the larger *westerly* disturbances—Continued.

Local mean time.											Sum.	Month.	Year.
h. m. 8 1.2	*h. m.* 9 1.2	*h. m.* 10 1.2	*h. m.* 11 1.2	Noon +1.2^{m}	*h. m.* 13 1.2	*h. m.* 14 1.2	*h. m.* 15 1.2	*h. m.* 16 1.1	*h. m.* 17 1.2	*h. m.* 18 1.2			
2	2	1	2	6	4	2	6	5	0	1	45	August	1882
0	1	3	3	4	2	3	3	5	0	0	24	September	"
1	2	3	2	1	2	2	5	4	1	0	52	October	"
0	6	6	5	1	7	8	7	7	2	2	69	November	"
0	1	3	2	3	4	2	3	4	3	0	28	December	"
0	2	2	2	3	0	1	6	2	2	1	25	January	1883
1	1	3	3	6	9	6	2	2	2	1	36	February	"
2	4	3	4	1	4	1	3	2	2	0	28	March	"
0	2	2	2	2	6	7	4	4	4	3	42	April	"
3	2	1	1	2	0	1	4	3	3	1	40	May	"
1	0	2	2	5	4	2	3	3	4	1	40	June	"
2	3	1	7	4	5	6	8	6	2	3	79	July	"
12	26	30	35	38	47	41	54	47	25	13	508	Hourly sums.	

Aggregate amount of the larger *westerly* disturbances—Continued.

Local mean time.											Σ	Average amount.	Month.	Year.
h. m. 8 1.2	*h. m.* 9 1.2	*h. m.* 10 1.2	*h. m.* 11 1.2	Noon +1.2^{m}	*h. m.* 13 1.2	*h. m.* 14 1.2	*h. m.* 15 1 2	*h. m.* 16 1.2	*h. m.* 17 1.2	*h. m.* 18 1.2				
′	′	′	′	′	′	′	′	′	′	′	′	′		
202	201	87	227	904	628	252	578	517	0	72	4 960	110	August	1882
0	93	281	229	354	230	341	304	402	0	0	2 234	93	September	"
75	391	265	179	131	407	337	711	538	66	0	5 675	109	October	"
0	604	796	1 234	292	1 459	1 137	1 099	817	167	224	10 286	149	November	"
0	68	30[illegible]	206	280	422	152	333	347	287	0	2 754	98	December	"
0	150	241	169	298	0	104	560	189	178	82	2 422	97	January	1883
81	83	319	576	801	934	910	148	176	324	73	4 425	123	February	"
142	687	324	475	171	400	141	348	170	169	0	3 219	115	March	"
0	183	163	256	277	641	1 026	374	471	433	294	4 646	111	April	"
286	193	79	75	135	0	111	425	315	271	103	3 557	89	May	"
68	0	214	194	398	444	140	263	307	359	95	3 657	91	June	"
170	242	94	761	473	706	603	977	555	168	269	8 301	105	July	"
1 024	2 895	3 169	4 581	4 514	6 271	5 254	6 120	4 804	2 422	1 212	56 136	--------	Hourly sums.	
85	111	105	130	119	133	128	113	102	97	93	--------	110	Average magnitude.	

The contents of the preceding tables enable us to draw the following conclusions, and, first, with regard to frequency:

(*a*) During the year ending August 1, 1883, the *easterly* disturbances exceeded the number of *westerly* ones in the proportion of 661 to 508, or of 1.30 to 1.

(*b*) In the annual variation the disturbing force was most active during November, and least so during September, for both easterly and westerly directions; and the same holds, though in a less marked degree, for the months of July and March, respectively. The ratio of preponderance of easterly over westerly disturbances in the annual variation is as follows.

Aug., 0.87	Feb., 0.47
Sept., 0.33	Mar., 0.46
Oct., 0.88	Apl., 0.93
Nov., 2.38	May, 0.52
Dec., 3.46	June, 1.62
Jan., 3.36	July, 0.86

This preponderance is most decided during November, December, and January, when the ratio rises to 3.1 to 1; in all other months, excepting July, the westerly disturbances are more numerous than the easterly ones, and the above ratio declines to 0.6 to 1.

(*c*) In the diurnal variation the easterly and westerly disturbances follow different laws as to frequency of occurrence, as is shown by the following table of ratios of the hourly values to the mean of all hours (27.5 for easterly and 21.2 for westerly directions), taken as unity, and further illustrated by the accompanying diagram:

Relative frequency of disturbances, hourly ratios, Fort Conger local mean time.

Hour.	Easterly disturbances.	Westerly disturbances.	Hour.	Easterly disturbances.	Westerly disturbances.
Midn't $+1.2^m$	1.4	0.2	$13+1.2^m$	0.4	2.2
1	1.7	0.3	14	0.5	1.9
2	1.8	0.3	15	0.6	2.6
3	1.5	0.6	16	0.5	2.2
4	1.1	0.6	17	0.9	1.2
5	1.1	1.0	18	0.7	0.6
6	1.1	0.7	19	0.8	0.7
7	1.1	0.8	20	0.8	0.6
8	1.0	0.6	21	1.0	0.3
9	0.8	1.2	22	1.1	0.3
10	0.9	1.4	23	1.4	0.2
11	0.8	1.7			
Noon.	1.0	1.8	Sum.	24.0	24.0

The easterly disturbances are more equally distributed over the 24 hours than the westerly ones.

The disturbing force, deflecting the north end of the magnet towards the (magnetic) east, is most active 2 hours after midnight, and is above the average frequency between the (night and early morning) hours 21 to 8, and is least active between the (afternoon) hours 12 to 17. On the other hand, deflections to the west are most frequent 3 hours after noon, and are above the average between 9 and 17 hours, and least frequent between the (night) hours 21 to 3. Easterly and westerly disturbances are, therefore, in a general way in opposition in daily occurrence, the former prevailing during hours immediately following the middle of night and the latter during hours immediately following the middle of day, as had been noted for the winter 1875–'76.

Secondly, with respect to the magnitude of deflections, we observe:

(*d*) Easterly disturbances slightly exceed westerly ones in the ratio of 117 to 110.

(*e*) Respecting the annual variation there appears to be a correspondence between the frequency and intensity of action. Thus, the November disturbances appear most frequent as well as largest, on the average 2° 15′ from the normal direction easterly* and 2° 29′ from the normal direction westerly, the corresponding means for the whole year being 1° 57′ and 1° 50′.

(*f*) During the diurnal variation the intensity of the disturbing force varies but little, but there appears to be likewise a tendency to a combination of frequency with intensity of action, and this is most noticeable in the case of the westerly disturbances, which for noon reach the average magnitude, 2° 13′, and for midnight only 1° 30′.

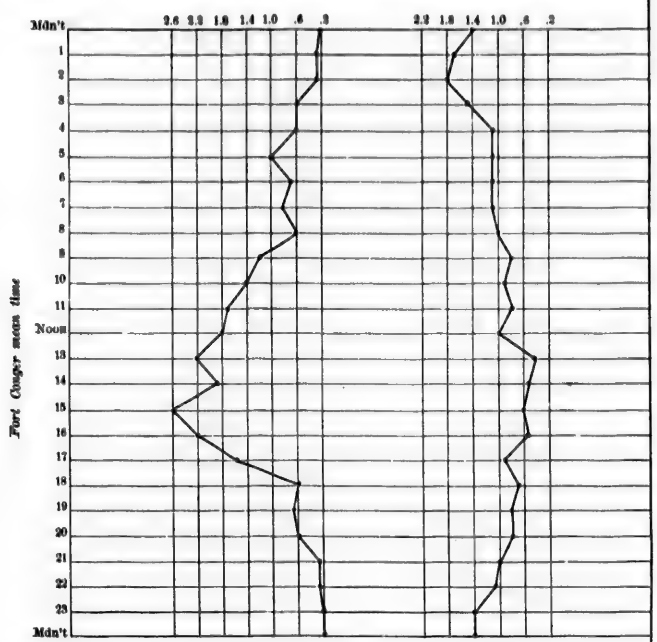
The maximum easterly disturbance was noted November 20, 1882, at $1^h\ 1^m$, when the needle was deflected 7° 05′ from the normal position for that hour and month, and the maximum westerly disturbance was noted on the same day at 7^h (local time), when the deflection in the opposite direction amounted to 10° 24′ from the normal; disturbance range, 17½°. Observations made at intermediate times showed still greater disturbances, with a range of nearly 20½° on November 16 and 17. There were but four days in this month when no disturbances were marked in the hourly record.

* The larger value 2° 47′ for October is influenced by the small number of disturbances.

RELATIVE FREQUENCY OF DISTURBANCES IN DECLINATION AT FORT CONGER, AUG., 1882, TO AUG., 1883.

RATIO OF

WESTERLY DISTURBANCES. EASTERLY DISTURBANCES.



Term-day observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

JULY 1, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	831.4	839.3	841.1	837.0	833.3	823.0	811.2	803.7	798.6	803.8	806.8	806.6
1	820.5	827.2	827.7	822.9	827.4	837.4	836.7	831.4	842.1	849.7	844.9	840.5
2	853.1	865.5	877.1	887.6	887.9	882.4	880.0	872.9	872.8	868.2	869.6	870.0
3	874.6	885.6	894.1	889.4	886.7	896.0	904.9	914.0	927.9	928.1	916.6	908.9
4	910.1	904.6	903.1	903.4	909.7	915.7	917.9	922.7	921.4	915.3	923.5	918.3
5	914.6	923.7	918.9	917.7	926.5	922.3	925.1	925.8	923.4	925.0	931.3	927.1
6	928.6	928.2	926.9	913.2	912.4	904.6	905.6	896.1	894.3	895.2	901.6	898.5
7	904.1	918.4	918.0	930.0	938.8	950.2	956.1	957.6	955.9	940.8	940.3	940.6
8	931.7	929.6	919.3	918.0	907.8	918.6	913.6	907.7	897.0	895.4	892.9	887.2
9	873.1	863.6	887.8	889.8	896.4	905.2	914.8	933.2	945.8	944.2	939.1	954.0
10	953.5	954.5	965.2	955.5	961.6	956.6	943.0	944.3	939.1	950.1	956.1	956.2
11	953.1	961.1	964.4	964.7	957.4	963.6	959.0	957.0	961.1	941.4	945.6	954.6
Noon.	944.0	944.4	945.3	935.8	937.4	933.6	929.1	933.3	936.0	928.1	934.0	934.8
13	926.6	927.3	927.6	926.8	926.5	930.0	933.5	927.8	935.3	934.6	934.2	933.1
14	925.0	922.1	921.3	914.1	905.9	913.1	911.4	912.3	908.7	905.9	905.8	902.5
15	903.2	911.2	915.1	914.8	915.2	908.7	904.9	904.6	898.0	887.4	886.4	882.0
16	878.6	876.0	873.8	874.1	876.5	880.0	877.0	874.9	875.0	878.7	881.0	874.9
17	876.9	868.8	877.0	878.5	876.9	870.4	872.8	866.1	864.6	874.2	895.3	896.7
18	879.4	874.1	887.9	883.6	862.3	869.8	867.6	858.5	862.8	869.2	872.2	873.1
19	865.7	869.6	871.9	870.4	872.2	864.8	860.9	864.0	863.0	868.4	851.1	857.1
20	853.6	862.9	855.7	858.4	860.9	861.5	862.3	861.5	859.0	860.5	870.0	881.0
21	890.6	895.7	899.5	900.9	903.9	901.3	906.3	907.0	894.2	890.8	885.6	895.8
22	912.0	916.1	911.7	910.2	905.1	905.5	898.1	895.4	904.2	915.6	916.4	920.8
23	926.3	926.3	934.0	927.6	925.9	915.9	911.8	917.9	914.9	918.8	912.4	907.7

JULY 15, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	785.2	767.1	774.6	778.0	778.0	781.7	785.4	778.1	780.8	788.2	786.8	803.6
1	805.4	798.8	808.2	819.7	819.0	818.3	816.3	815.9	819.6	813.9	816.6	818.4
2	818.5	824.5	821.2	819.4	819.9	817.7	821.2	821.9	817.0	818.3	813.0	808.2
3	804.4	804.6	807.1	808.8	808.0	811.5	811.2	808.2	810.6	809.5	809.8	808.4
4	812.2	811.3	807.8	811.7	813.3	816.6	815.9	816.8	821.1	822.3	820.1	814.0
5	810.2	808.7	807.7	813.0	818.3	816.4	815.5	821.1	817.3	818.0	817.9	822.3
6	815.7	821.8	819.6	819.6	823.3	851.0	835.2	831.6	835.8	840.4	821.5	809.3
7	807.7	806.8	806.7	816.1	820.1	821.7	809.2	807.8	789.3	798.9	796.0	794.8
8	793.5	795.2	797.6	801.7	788.4	777.7	808.9	811.0	827.9	805.5	793.3	790.7
9	794.9	792.2	792.8	804.1	817.9	837.3	847.3	850.9	822.1	802.4	807.9	806.4
10	807.1	806.8	800.9	815.5	811.0	800.4	802.5	813.9	812.4	806.9	854.9	816.5
11	827.6	821.0	822.9	820.5	818.6	823.2	820.6	816.8	806.2	800.3	788.9	789.8
Noon.	795.8	801.8	807.5	811.5	817.1	813.5	820.9	819.9	824.3	821.7	815.2	809.3
13	800.3	787.6	780.2	772.4	764.6	763.4	760.2	766.3	763.1	766.5	768.9	766.0
14	766.3	772.9	766.5	761.7	764.6	767.0	777.0	775.2	774.7	770.6	763.3	762.0
15	757.0	757.8	754.4	750.8	747.0	745.4	746.9	749.9	753.4	751.9	745.4	746.1
16	743.9	740.4	732.0	739.3	740.4	743.9	750.0	751.1	754.6	740.4	739.5	732.7
17	734.0	733.3	732.6	731.5	730.1	733.3	732.0	737.8	739.4	738.6	739.9	750.0
18	754.0	753.2	756.6	755.1	750.3	747.3	746.1	752.0	753.6	752.1	754.7	751.4
19	747.9	751.3	754.7	755.8	753.9	753.5	752.4	748.6	750.3	751.5	750.6	751.7
20	752.1	754.8	762.7	761.0	763.0	760.6	760.2	765.0	766.5	769.4	774.6	773.6
21	767.9	766.8	772.2	771.4	774.3	774.6	773.8	774.4	775.3	780.4	788.1	774.4
22	772.3	777.1	771.1	757.2	775.1	778.0	780.9	779.7	770.3	774.0	776.9	769.4
23	776.5	770.2	761.7	769.2	767.2	774.4	770.3	777.7	769.5	768.3	774.9	773.6

Term-day observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

AUGUST 1, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	773.7	788.5	790.9	798.4	887.1	800.0	782.6	765.5	761.1	783.1	787.9	798.4
1	799.9	789.7	799.4	784.8	775.8	780.3	788.6	791.8	815.5	870.7	874.3	867.7
2	859.6	836.6	860.3	879.6	888.4	900.4	885.9	887.9	887.8	887.3	878.7	865.6
3	858.2	867.8	861.3	856.7	864.8	855.8	872.7	879.7	872.5	868.2	874.7	865.9
4	859.5	859.5	863.7	834.0	847.0	868.0	877.5	894.4	893.9	897.1	887.9	880.2
5	891.0	886.0	884.1	872.3	876.9	878.0	886.6	901.6	909.7	927.2	933.8	935.3
6	933.6	934.5	934.8	922.5	925.2	909.0	903.0	903.3	901.8	907.0	911.4	935.5
7	932.8	920.7	939.0	936.6	934.5	930.7	934.1	928.0	914.3	911.7	910.2	902.9
8	909.2	905.1	887.4	894.0	879.1	925.4	889.4	911.3	920.5	930.3	923.2	922.9
9	905.1	915.0	922.7	939.4	943.0	939.4	947.6	959.9	945.5	951.3	937.6	931.1
10	937.9	949.0	937.8	939.6	918.4	897.5	885.0	888.8	890.4	881.2	871.2	873.3
11	865.9	869.0	868.9	878.9	861.3	853.0	861.4	856.0	846.1	834.4	857.3	878.2
Noon.	873.4	873.5	878.0	864.0	862.4	869.3	865.5	853.0	844.3	836.8	826.0	831.0
13	813.4	797.7	791.0	788.9	787.0	764.9	769.1	775.1	776.0	742.9	726.2	702.5
14	694.0	718.7	753.9	778.9	789.8	788.8	787.0	799.5	803.2	799.8	786.9	771.7
15	754.9	718.2	744.6	752.9	751.5	748.3	751.5	756.3	747.8	734.5	735.5	738.9
16	754.3	781.1	759.7	740.6	711.9	700.3	698.8	696.8	702.1	702.1	704.4	690.4
17	689.0	676.5	675.7	677.4	679.4	671.5	675.1	669.5	655.7	656.8	646.9	646.5
18	640.8	645.8	648.6	641.0	645.1	655.4	662.3	677.6	671.1	677.7	656.1	681.1
19	684.8	673.5	661.5	659.1	664.6	663.3	656.5	651.9	644.1	659.3	651.9	659.5
20	678.9	680.7	675.5	674.5	694.8	676.3	671.5	687.3	690.1	679.0	695.8	688.9
21	669.6	679.5	674.2	672.5	680.4	673.5	684.8	699.6	713.1	738.5	750.3	758.0
22	774.7	766.6	772.4	762.4	769.6	764.1	766.6	763.4	773.4	780.7	780.9	798.2
23	819.7	813.4	812.6	806.2	810.2	824.3	840.5	859.8	868.4	870.9	880.3	863.9

AUGUST 15, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	770.9	786.8	790.2	790.4	786.4	805.0	812.3	815.0	803.8	799.3	810.9	823.4
1	831.7	829.1	821.0	818.7	816.2	826.2	822.1	811.4	819.1	830.2	844.1	840.2
2	881.7	879.7	871.4	859.2	853.5	845.9	839.7	840.6	844.4	853.5	869.3	878.9
3	893.3	889.0	888.9	878.6	867.4	867.8	870.7	874.2	872.2	883.6	876.3	875.0
4	866.5	879.1	873.6	866.0	846.9	826.5	844.4	830.3	824.9	826.0	842.8	857.0
5	869.2	869.9	844.4	839.8	826.5	831.5	855.8	838.1	848.5	863.8	864.5	868.5
6	853.5	864.1	862.3	868.9	856.2	850.0	868.7	867.8	830.7	844.1	840.2	832.4
7	845.9	856.3	866.4	865.0	848.3	835.2	857.2	847.3	843.8	846.2	873.6	871.2
8	830.0	840.2	828.5	829.6	846.9	857.0	846.6	849.0	831.6	775.8	777.2	782.2
9	795.3	793.9	815.5	833.2	791.5	784.4	783.8	787.7	789.6	786.1	774.1	778.5
10	775.7	791.6	831.0	802.6	802.7	802.3	797.4	803.7	804.9	799.1	803.8	797.8
11	797.8	795.1	793.2	780.7	773.0	770.3	774.0	784.8	788.8	794.1	795.8	792.1
Noon.	804.6	795.8	810.0	805.6	804.3	799.1	796.1	794.5	798.7	793.2	787.4	791.6
13	796.4	800.3	800.9	807.5	823.3	822.6	799.5	789.0	802.7	800.7	798.8	807.7
14	798.9	798.9	790.4	793.7	777.9	772.1	776.0	776.0	775.2	781.0	785.0	786.6
15	826.6	825.5	827.5	819.4	823.2	823.5	824.5	841.7	839.7	832.4	807.4	795.9
16	741.3	747.3	743.4	761.4	751.2	754.0	760.4	730.3	738.7	756.2	765.1	769.9
17	775.7	798.8	747.1	735.5	737.1	735.4	730.0	719.4	732.8	759.4	765.2	774.6
18	783.7	777.3	767.6	770.6	769.2	763.7	777.3	766.0	755.5	748.4	751.6	731.4
19	742.5	751.9	770.6	781.8	777.9	781.0	763.6	755.1	728.7	757.4	783.3	793.4
20	804.8	808.2	804.8	778.9	772.1	766.4	768.7	777.9	770.6	769.2	746.1	758.6
21	766.6	767.6	753.3	751.7	745.1	745.1	766.2	766.0	764.4	769.6	780.7	789.9
22	794.9	783.6	775.9	787.8	787.2	785.4	789.5	787.0	786.0	796.3	798.7	800.7
23	754.6	770.2	750.5	758.3	730.3	735.4	737.6	731.4	745.0	774.7	785.0	795.0

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\varphi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

SEPTEMBER 1, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	810.4	808.6	810.8	806.7	808.1	811.1	819.1	821.5	824.5	829.0	834.8	834.1
1	830.4	825.3	823.6	822.2	818.5	816.4	818.2	815.4	810.0	802.3	799.6	794.1
2	791.4	787.6	796.2	796.9	799.6	808.1	804.2	796.9	809.7	814.0	812.4	811.5
3	816.8	816.3	815.0	817.4	814.5	808.2	803.7	804.1	804.0	809.3	808.4	802.3
4	804.1	805.4	804.2	804.9	806.1	803.4	804.4	809.2	811.1	815.6	817.3	817.0
5	816.8	814.6	815.0	813.9	816.4	813.6	816.2	817.5	819.8	818.6	820.1	822.9
6	828.2	829.5	824.8	817.7	816.4	823.1	827.5	828.6	826.3	826.7	820.9	821.8
7	822.2	817.0	811.3	807.4	808.2	797.0	796.5	795.6	796.9	803.3	797.8	809.6
8	811.5	813.4	806.9	796.9	788.1	791.6	794.5	791.6	797.8	799.8	795.6	770.1
9	796.9	794.9	782.5	779.4	784.8	782.1	802.5	794.1	786.3	778.3	784.4	783.9
10	784.5	799.0	806.9	795.4	776.6	763.3	779.8	774.4	787.0	801.6	794.5	789.0
11	787.8	782.6	775.5	761.3	769.7	777.8	787.6	787.8	793.4	796.6	795.8	792.0
Noon.	779.0	801.6	792.6	796.5	777.1	775.7	776.6	781.1	777.8	770.8	770.1	775.6
13	777.0	775.2	777.8	782.8	782.2	779.4	781.4	781.0	779.7	782.1	781.7	784.2
14	781.0	788.8	785.9	783.7	776.4	772.5	786.2	788.3	787.6	780.0	775.0	778.2
15	774.1	782.3	788.9	783.9	780.8	781.7	781.5	780.0	780.7	777.9	777.5	778.3
16	777.8	779.2	779.6	780.9	780.2	781.9	781.6	783.7	784.0	786.8	786.2	788.3
17	786.5	786.2	791.6	787.7	788.7	793.5	793.8	792.2	793.1	796.6	795.9	792.6
18	794.4	797.8	799.0	794.9	795.3	798.3	804.9	806.6	804.8	805.6	807.3	807.6
19	809.0	808.8	810.0	802.6	805.2	799.4	805.8	799.9	799.5	797.7	797.0	796.9
20	801.0	807.0	808.3	815.9	816.9	819.6	818.9	814.8	811.3	810.4	816.6	816.1
21	822.1	821.2	815.8	809.6	818.4	813.8	809.0	810.0	812.5	814.3	810.0	814.5
22	806.5	809.0	808.4	819.9	818.8	807.6	795.8	802.6	799.3	794.6	792.8	792.6
23	794.9	801.5	793.9	804.4	800.5	804.1	805.8	803.2	801.3	799.7	799.3	805.2

SEPTEMBER 15, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	804.1	802.2	816.3	816.8	818.4	812.7	802.7	810.2	810.0	805.1	795.8	820.2
1	838.1	841.0	841.3	849.5	849.9	836.0	836.2	831.5	824.0	830.1	825.2	821.9
2	807.6	805.3	795.9	788.7	804.8	791.1	790.4	785.7	784.6	795.5	795.1	824.3
3	804.0	802.5	798.6	793.6	791.1	794.2	799.4	816.3	827.3	819.2	813.0	810.8
4	807.3	805.4	801.4	806.2	810.6	816.3	827.3	835.2	841.5	834.3	828.3	852.3
5	846.2	842.4	855.4	860.0	848.6	834.3	844.2	850.6	858.4	873.7	876.4	877.1
6	874.8	870.1	866.2	868.9	870.3	873.1	870.2	872.3	875.7	856.9	853.7	845.0
7	826.7	819.4	819.4	824.7	839.3	856.6	855.0	853.8	852.7	849.4	845.5	838.2
8	846.0	841.3	862.7	856.4	861.2	861.1	856.6	853.7	838.5	836.2	845.6	843.1
9	856.3	848.2	856.8	849.7	846.7	842.2	831.4	806.0	801.0	807.6	811.3	816.9
10	816.9	823.3	825.0	833.7	821.3	827.8	820.6	817.7	818.0	822.6	820.2	813.7
11	809.0	807.5	802.1	806.0	808.5	813.5	818.5	816.4	811.9	811.9	814.9	809.8
Noon.	814.6	824.7	822.2	821.3	817.3	811.6	806.8	803.7	803.2	802.8	794.2	793.9
13	791.9	804.4	800.0	814.2	813.0	814.8	816.4	818.1	793.4	788.4	778.3	790.7
14	776.5	781.9	781.5	786.7	786.1	785.6	782.5	772.0	766.6	771.6	770.4	779.0
15	773.5	780.8	782.8	782.9	780.3	779.1	776.5	780.8	782.5	784.1	773.5	767.1
16	779.2	777.2	772.3	783.7	791.0	778.5	769.5	769.2	774.7	779.5	789.2	802.8
17	802.2	809.9	811.3	806.1	808.0	815.0	820.1	823.2	817.3	812.7	819.7	820.5
18	817.7	812.6	810.6	804.5	806.0	809.1	800.9	794.3	793.4	796.3	794.9	783.6
19	776.0	774.8	785.6	791.1	816.1	830.8	833.0	836.2	840.0	837.4	835.9	828.5
20	828.1	830.7	823.3	823.6	823.3	818.4	830.1	810.6	803.4	798.2	784.1	777.0
21	788.0	794.7	781.7	792.5	790.7	796.1	795.2	789.6	786.5	776.9	766.0	767.3
22	769.3	772.8	775.3	781.4	790.7	801.0	813.1	823.6	809.3	807.5	804.1	801.3
23	802.2	807.1	814.0	819.6	823.6	833.8	833.3	821.2	820.5	823.9	832.1	832.3

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

OCTOBER 1, 1882.

Hour.	0^m	5^m	10^m	15^m	20^m	25^m	30^m	35^m	40^m	45^m	50^m	55^m
	′	′	′	′	′	′	′	′	′	′	′	′
0	730.7	730.0	728.2	725.2	725.4	723.6	726.1	721.3	720.1	716.3	715.0	719.0
1	724.0	722.7	719.2	723.6	721.1	722.3	730.0	720.4	723.8	723.6	721.8	722.9
2	722.5	719.8	722.2	723.8	722.8	728.9	730.0	733.8	740.3	740.9	736.4	734.0
3	733.1	729.4	732.0	736.4	734.0	738.7	737.3	736.4	735.2	732.2	736.9	734.3
4	729.8	730.6	732.5	734.4	735.5	736.4	735.1	735.4	735.4	736.5	737.9	738.9
5	738.0	742.7	743.4	748.4	745.9	750.1	752.5	752.0	746.6	747.8	755.3	754.1
6	750.1	744.4	742.6	741.9	743.8	744.3	740.6	737.3	737.5	738.8	739.8	740.2
7	739.3	739.9	738.6	742.7	736.8	728.3	728.7	731.8	729.0	731.6	729.0	725.5
8	724.3	724.2	724.7	721.5	721.3	719.0	725.2	729.3	730.4	730.1	731.6	728.3
9	728.0	732.9	738.8	739.6	738.2	737.6	741.3	757.5	748.4	747.4	741.3	740.3
10	743.0	744.8	739.5	742.7	742.6	740.2	734.1	724.5	724.2	727.4	733.1	725.1
11	728.6	731.1	729.0	728.3	726.7	726.6	725.1	725.6	722.4	716.9	715.0	715.0
Noon.	715.8	714.3	712.4	714.3	716.7	712.2	711.9	712.2	710.5	720.1	717.4	715.8
13	720.9	717.3	712.4	719.2	707.2	707.1	711.7	709.0	712.9	716.9	711.4	706.1
14	710.8	700.8	698.3	708.2	714.7	721.8	722.8	697.8	689.0	687.5	687.1	691.3
15	714.3	706.8	709.4	713.3	711.7	699.3	687.1	746.8	744.4	740.4	743.0	778.5
16	778.6	774.0	776.9	784.2	785.8	785.1	789.7	791.9	793.1	798.3	788.8	789.7
17	797.7	798.0	805.6	806.1	809.6	807.9	809.8	809.0	811.8	814.1	815.9	818.2
18	813.0	814.5	812.3	812.3	812.0	812.5	814.5	816.4	816.4	813.0	809.0	810.1
19	806.6	810.6	812.7	811.6	814.6	818.5	818.9	817.9	807.2	813.1	812.3	811.8
20	814.9	819.4	821.3	822.6	820.6	820.3	815.1	812.7	813.4	817.1	821.2	822.6
21	824.6	819.5	818.5	817.9	815.5	818.8	816.7	813.3	820.2	816.1	821.2	827.8
22	829.1	825.7	820.0	819.9	822.3	817.9	819.9	....	820.7	823.8	822.2	821.1
23	828.2	828.8	821.6	819.8	823.4	831.2	823.1	822.4	828.0	821.9	821.5	820.0

OCTOBER 15, 1882.

Hour.	0^m	5^m	10^m	15^m	20^m	25^m	30^m	35^m	40^m	45^m	50^m	55^m
	′	′	′	′	′	′	′	′	′	′	′	′
0	800.3	803.9	801.0	794.6	786.2	720.6	830.5	815.6	811.3	813.1	807.2	804.8
1	803.1	798.4	801.5	800.3	804.3	809.3	809.8	811.2	806.3	805.9	806.2	812.9
2	811.0	818.0	831.8	830.5	823.8	821.9	826.3	829.1	816.7	817.6	820.9	814.7
3	806.0	825.6	827.7	840.4	844.2	853.9	859.1	859.7	857.7	859.3	858.1	858.5
4	853.0	847.1	844.4	849.5	852.6	850.9	848.3	841.3	844.7	842.2	839.3	834.9
5	833.6	824.1	821.2	818.5	809.4	788.2	770.0	790.7	792.7	787.7	780.5	771.7
6	778.4	786.9	776.4	779.5	786.6	795.9	813.0	824.9	840.4	839.8	830.4	829.2
7	836.3	829.4	835.1	830.0	809.2	813.9	823.3	818.7	817.1	822.9	834.2	838.4
8	836.2	827.0	821.2	821.0	823.8	826.4	832.5	836.3	840.1	835.0	838.0	840.4
9	837.2	828.0	816.8	816.8	827.4	826.5	826.1	824.9	821.8	807.3	804.2	800.1
10	806.5	801.9	799.6	795.6	789.6	791.1	789.3	784.1	783.0	778.8	775.4	781.5
11	762.7	756.4	752.9	752.5	764.2	767.6	771.9	770.8	759.8	744.2	737.9	729.0
Noon.	736.8	739.4	738.0	742.0	740.4	743.6	745.1	750.6	750.1	749.8	752.1	736.1
13	731.8	741.5	740.8	727.7	744.2	739.0	736.4	740.0	736.5	739.2	746.1	734.1
14	741.5	737.5	733.4	727.0	727.5	722.9	713.4	697.7	699.0	702.4	702.4	721.3
15	717.6	717.2	708.2	712.0	712.2	722.1	716.0	717.2	719.1	712.0	711.3	709.1
16	702.7	704.0	707.1	707.9	708.9	710.9	715.4	703.6	692.5	717.8	716.9	713.8
17	718.4	721.6	733.9	729.4	753.2	761.6	755.4	765.3	771.9	780.1	778.0	771.5
18	761.6	756.5	757.5	767.5	769.7	751.7	763.1	766.1	768.9	766.5	774.0	794.4
19	787.2	777.2	775.1	779.9	781.3	780.8	788.5	793.6	799.2	804.7	803.8	796.9
20	794.6	792.2	791.8	782.3	781.0	769.1	724.4	738.5	753.0	768.4	774.6	781.0
21	785.0	783.2	772.2	775.4	779.2	783.3	768.7	770.2	786.1	789.2	796.0	793.7
22	801.5	808.8	803.6	801.8	796.7	802.1	802.8	803.9	791.5	787.4	794.5	786.7
23	773.8	766.6	750.1	747.4	761.3	777.6	786.3	787.9	799.1	786.7	791.0	797.0

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

NOVEMBER 1, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	763.5	764.2	758.8	767.0	772.1	775.2	777.6	778.3	780.3	780.4	780.8	779.9
1	784.9	783.9	774.1	777.9	788.5	788.7	788.6	790.8	787.9	786.9	786.3	781.8
2	794.0	800.0	791.6	797.8	793.5	782.2	780.1	759.5	744.3	731.1		
3	732.7	728.3	721.3	722.6	728.2	731.6	744.8	749.8	751.2	745.8	768.2	784.1
4	769.0	760.7	759.1	758.8	756.9	768.5	782.1	760.9	729.9	724.0	723.3	724.1
5	721.7	724.8	723.6	724.4	721.7	720.2	716.7	731.0	744.1	741.2	738.1	728.4
6	734.1	741.2	744.8	746.3	740.8	734.9	732.7	735.0	742.0	740.8	738.0	737.2
7	728.6	727.0	728.3	735.7	735.2	735.4	738.1	723.4	726.1	722.6	728.7	731.5
8	731.4	731.9	729.0	731.8	731.8	731.1	736.9	731.1	732.7	729.5	733.7	732.6
9	721.5	728.3	734.2	730.8	724.4	720.1	726.3	729.3	723.2	721.5	725.5	725.9
10	721.5	717.7	715.7	717.8	720.2	716.6	714.0	765.6	764.2	767.1	771.2	769.0
11	776.2	783.9	783.8	782.6	786.6	789.4	782.6	787.0	793.5	791.0	781.3	783.5
Noon.	785.5	783.4	785.3	743.3	755.6	761.9	760.7	770.2	778.2	793.2	797.2	787.1
13	785.0	782.0	777.2	776.2	763.4	763.2	759.7	755.0	756.3	756.4	760.9	763.8
14	761.8	754.1	738.7	717.3	712.6	707.7	784.4	695.8	700.5	703.5	707.6	713.2
15	709.1	706.5	705.7	703.3	705.4	714.7	707.5	709.2	706.3	701.2	693.7	681.6
16	701.7	703.9	738.1	743.5	767.6	777.7	775.6	780.2	775.5	784.6	767.8	774.7
17	774.5	752.8	737.9	733.8	732.2	737.8	733.7	745.5	752.8	762.9	764.7	776.5
18	764.3	768.2	757.3	757.0	747.2	762.5	739.2	738.6	737.1	729.9	718.4	732.7
19	722.3	735.4	734.5	750.9	743.5	742.0	748.5	733.4	731.1	734.4	737.1	744.7
20	733.8	753.3	767.8	767.0	760.7	768.7	780.6	779.1	788.4	790.9	781.0	766.7
21	773.1	777.6	779.8	779.1	778.2	781.9	781.6	785.8	784.3	788.4	779.2	782.5
22	782.5	784.3	790.1	794.0	791.6	788.9	792.1	793.6	793.7	793.5	796.3	794.6
23	791.7	792.4	788.6	788.4	782.7	779.1	778.9	773.3	773.8	803.2	791.2	795.5

NOVEMBER 15, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	691.5	681.4	683.0	684.2	707.3	729.8	770.6	787.3	833.8	857.9	809.2	837.6
1	786.5	790.0	809.9	768.3	731.9	737.7	732.1		716.4	721.2	735.3	744.0
2	773.1	802.7	819.4	802.1	787.8	790.1	795.9	781.8	777.1	755.4	797.5	798.2
3	812.8	837.8	812.4	750.8	742.5	768.7	789.0	826.3	805.6	782.0	776.1	859.0
4	932.0	925.2	940.2	944.6	977.2	966.5	1022.2	1068.3	1128.0	1134.7	1140.9	1088.8
5	1012.5	1085.6	1039.8	941.9	928.1	955.2	997.2	1171.8	1219.5	1217.0	1091.2	1050.2
6	1082.9	1057.4	1082.8	979.2	962.2	953.4	1043.2	1010.1	1055.1	1082.9	1036.6	1096.8
7	1128.8	1035.2	1049.4	1044.2	1005.1	943.4	946.9	970.1	966.7	964.3	935.6	953.6
8	915.7	919.5	915.7	910.2	975.3	1124.3	1246.3	1252.9	1183.8	1130.2	1018.3	905.2
9	896.3	903.9	937.9	929.4	889.9	897.9	838.3	884.4	882.6	831.7	849.9	958.3
10	861.5	864.1	761.1	832.8	947.9	840.9	807.9	656.3	645.6	794.5	723.7	758.8
11	773.6	830.0	828.2	774.6	669.1	671.8	692.7	753.4	763.4	798.2	750.4	706.0
Noon.	667.4	640.4	660.0	677.5	652.5	755.6	690.2	712.7	670.5	760.0	841.1	793.3
13	792.1	810.8	820.8	790.2	770.2	877.7	813.5	848.7	866.7	838.2	911.7	904.3
14	841.2	871.0	947.9	942.5	932.0	926.6	921.1	997.2	1021.7	1042.3	1035.9	1004.3
15	941.0	954.3	959.1	902.7	929.4	962.3	924.6	905.2	900.9	985.6	1004.4	957.2
16	1036.7	1002.8	1004.1	892.1	902.1	912.9	884.7	929.8	873.2	836.3	806.4	822.7
17	846.4	847.8	847.1	839.3	771.9	814.4	778.1	741.7	704.4	691.1	697.9	701.0
18	677.8	736.2	707.3	784.0	822.7	827.8	792.4	877.1	904.0	860.4	808.9	831.0
19	790.5	789.9	835.9	858.7	741.7	871.7	943.2	963.1	889.5	1002.1	932.2	936.2
20	871.7	924.3	950.9	954.3	923.6	984.4	947.2	1000.4	966.2	899.3	948.3	906.4
21	913.3	959.0	977.9	930.4	940.7	952.8	936.9	931.4	1057.1	1055.7	1115.7	1082.5
22	1080.7	1178.4	1106.4	1126.5	1051.1	1057.5	925.8	1014.9	971.4	945.8	935.1	981.3
23	862.0	851.5	854.0	892.8	938.7	893.2	896.3	888.8	926.2	939.4	982.1	946.8

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\varphi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

DECEMBER 1, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	792.3	790.0	793.9	768.6	784.4	778.0	782.5	790.6	766.3	757.5	764.0	783.1
1	791.6	784.6	793.4	775.8	777.9	797.3	801.7	766.0	752.6	767.9	781.7	786.8
2	786.8	779.4	791.1	798.7	801.3	793.1	799.9	822.4	810.6	814.0	815.6	813.5
3	805.3	802.3	803.2	809.1	792.5	807.6	822.8	814.4	802.3	781.5	782.9	787.4
4	792.5	804.0	814.4	807.5	802.4	789.8	794.1	803.2	807.1	808.6	817.5	817.3
5	809.7	822.8	841.1	856.8	846.3	838.0	814.7	810.3	811.4	816.7	827.0	821.6
6	822.6	811.8	802.3	789.8	777.4	768.9	774.0	785.9	798.0	809.7	817.7	821.9
7	818.5	810.4	801.0	813.3	817.4	805.1	818.6	822.7	826.7	827.1	825.1	820.6
8	802.7	799.3	812.2	805.9	787.8	790.1	792.5	795.4	792.6	785.2	796.5	802.4
9	805.6	813.8	807.6	809.1	805.6	802.1	795.6	801.7	797.6	804.8	806.4	810.0
10	809.2	814.7	805.9	806.0	800.9	800.9	813.0	799.7	803.0	795.5	791.2	799.6
11	802.0	798.1	793.8	795.5	798.2	785.7	783.3	793.7	814.0	810.2	797.7	800.5
Noon.	803.7	791.4	807.2	807.8	795.2	795.4	785.9	778.6	798.0	800.9	799.4	798.1
13	793.1	784.4	786.7	788.3	782.8	780.5	784.1	734.4	759.0	775.4	766.0	770.3
14	780.3	787.4	790.6	783.5	767.5	742.3	737.3	755.7	771.3	766.2	753.9	751.2
15	755.6	767.2	775.1	769.0	763.5	754.5	752.8	756.7	763.1	776.1	785.8	801.4
16	799.5	800.5	798.1	802.2	803.5	796.4	793.2	799.1	806.2	810.8	808.1	812.7
17	810.8	815.2	808.5	808.0	795.5	796.3	805.2	811.6	809.3	812.4	805.4	803.9
18	803.1	807.6	801.0	795.2	797.0	794.8	800.7	804.3	801.0	795.0	783.3	769.4
19	770.2	784.7	798.9	803.8	802.6	795.6	791.4	797.4	798.7	788.4	777.2	773.3
20	785.0	791.4	796.6	796.8	795.9	794.5	797.6	799.6	793.6	787.9	783.3	784.0
21	783.6	783.5	777.5	771.7	769.3	767.1	773.1	779.2	789.0	788.1	782.0	783.6
22	781.1	778.6	780.6	777.6	778.8	775.3	783.7	776.6	785.0	781.9	773.7	760.5
23	748.0	764.0	762.4	756.3	757.0	762.5	778.8	789.0	800.5	793.7	794.3	782.4

DECEMBER 15, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	809.3	813.2	810.6	809.3	807.9	805.5	803.5	799.6	802.4	796.5	799.5	799.2
1	799.0	804.2	801.9	799.5	795.6	806.3	801.3	801.0	804.8	804.5	800.2	801.7
2	802.7	800.6	803.8	804.7	806.8	801.7	805.5	799.7	--------	802.4	804.1	802.7
3	802.8	806.9	804.2	805.7	800.3	798.4	798.7	795.9	792.2	792.6	796.4	799.3
4	798.6	796.4	795.2	799.7	802.5	800.0	800.8	802.0	798.1	797.7	804.8	802.3
5	800.3	799.7	801.9	801.0	796.8	803.1	801.4	800.4	800.7	801.1	804.7	802.4
6	803.1	806.2	805.5	805.5	806.6	804.8	803.5	805.2	803.4	805.2	796.9	805.5
7	801.4	808.4	805.5	801.4	802.1	803.8	801.4	805.2	805.4	811.6	819.5	828.8
8	831.5	820.2	814.0	806.9	799.7	802.1	805.1	802.5	803.1	803.6	804.6	807.2
9	807.4	803.6	805.2	805.2	801.5	800.8	803.9	798.0	798.8	801.0	799.3	798.6
10	803.6	808.4	811.6	801.9	797.9	794.4	798.6	796.9	803.4	801.9	799.1	804.7
11	812.8	779.6	780.0	785.1	792.6	798.6	802.0	801.7	797.2	800.3	805.9	806.6
Noon.	807.2	799.2	800.4	803.0	805.7	805.2	799.2	797.2	799.9	792.4	798.0	803.6
13	807.5	797.3	795.1	807.9	807.4	803.1	803.1	792.4	796.2	794.0	798.7	797.5
14	805.8	805.4	793.7	795.9	795.1	798.1	787.3	779.1	781.2	780.9	783.1	791.7
15	803.2	803.2	797.9	805.1	802.8	802.1	802.5	799.5	804.3	800.7	805.0	790.9
16	796.8	793.8	793.5	797.0	790.8	796.2	797.0	791.0	789.5	792.9	801.3	797.0
17	797.2	794.4	786.6	774.7	780.2	793.2	776.1	794.1	793.7	788.8	795.6	786.3
18	782.9	791.7	794.1	785.5	782.9	779.4	778.4	784.3	795.5	786.9	783.9	789.0
19	784.3	782.4	767.6	765.0	772.1	751.3	755.8	754.3	763.1	772.6	775.6	767.5
20	775.0	792.0	789.5	788.6	781.6	770.9	771.0	773.3	776.9	747.8	743.2	727.8
21	730.5	730.5	721.5	732.3	717.3	707.8	711.4	705.1	705.4	703.6	701.2	698.4
22	685.9	682.3	670.5	680.9	687.1	701.0	703.2	707.6	707.5	705.9	711.5	716.7
23	731.9	750.3	767.5	767.0	763.2	776.0	760.5	767.3	757.1	754.5	755.5	758.4

Term-day observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity.   Göttingen time.

JANUARY 1, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	985.3	994.2	1001.3	1005.5	1011.2	1013.4	1011.3	1009.7	1013.4	1021.3	1019.2	1028.8
1	1025.2	1037.4	1051.3	1047.1	1067.0	(*)	(*)	(*)	880.4	871.2	876.2	876.0
2	886.2	891.0	901.1	902.5	904.1	913.1	917.4	918.5	924.5	925.3	920.9	928.2
3	935.1	935.0	941.0	932.4	930.4	936.5	947.6	960.5	968.5	984.4	999.4	988.9
4	990.9	998.8	1000.5	1008.9	1029.1	1021.9	1017.2	1013.6	1011.0	1006.8	1005.6	1009.4
5	1011.6	998.6	971.4	964.8	966.8	979.3	988.2	981.8	979.4	974.2	973.4	965.3
6	979.3	971.9	979.6	978.8	986.9	987.8	990.0	994.5	984.4	980.7	984.3	997.1
7	1000.8	1004.0	1001.3	999.2	996.0	997.2	1000.4	1000.4	997.2	996.1	1001.8	1013.2
8	1014.6	1023.4	1023.9	1016.8	1010.9	1008.9	1009.5	1001.3	996.8	994.7	994.9	998.5
9	1011.3	1020.5	1020.1	1016.7	1008.5	1006.0	1007.8	1011.2	1014.5	1020.5	1022.1	1025.5
10	1028.2	1026.5	1024.5	1021.0	1019.4	1013.3	1006.6	1002.0	1003.8	1011.7	1021.1	1024.3
11	1019.9	1003.1	1020.4	1031.2	1041.9	1036.2	1035.6	1033.6	1027.2	1030.9	1029.7	1028.6
Noon.	1026.2	1016.8	1024.1	1032.7	1037.9	1030.5	1030.8	1049.6	1046.7	1048.4	1018.0	1034.7
13	1045.6	1052.9	1053.8	1054.2	1045.1	1015.3	998.6	1006.2	1002.7	996.4	1020.8	1005.1
14	1003.7	982.8	961.1	943.6	1006.2	887.8	916.4	941.9	980.7	1000.6	1037.1	1054.8
15	1068.5	1083.4	1086.2	1107.1	1038.0	1016.2	1010.4	1009.1	1028.3	1053.3	1032.6	1044.8
16	1058.9	1082.0	1076.6	1082.0	1076.0	1077.4	1076.4	1065.0	1064.5	1057.5	1055.6	1055.8
17	1052.2	1042.2	1023.8	1029.7	1042.9	1045.8	1035.6	1037.1	1051.7	1058.2	1054.1	1051.2
18	1053.9	1056.3	1060.4	1052.2	1057.5	1057.2	1039.1	1039.1	1043.7	1043.0	1042.6	1038.7
19	1043.0	1019.4	1008.2	1010.9	1006.5	1017.4	1012.3	1008.9	1014.7	1018.7	1027.5	1028.5
20	1010.5	999.9	1002.1	1007.8	1016.0	1008.9	1012.1	1009.2	1008.9	1004.6	1006.2	1011.9
21	1014.7	1017.5	1021.2	1027.0	1028.5	1037.7	1036.4	1038.9	1027.5	1018.1	1022.6	1018.6
22	1029.3	1045.2	1038.4	1046.1	1041.0	1050.0	1053.0	1056.8	1061.2	1073.4	1071.2	1074.7
23	1077.4	1072.4	1073.9	1070.8	1068.7	1067.5	1066.9	1066.3	1069.6	1065.6	1066.7	1060.6

* Torsion taken out.

JANUARY 15, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	828.2	830.7	829.8	829.5	831.4	830.4	834.0	837.7	841.5	844.4	845.3	847.6
1	853.8	856.9	864.0	867.0	867.8	869.5	878.6	882.2	887.0	891.7	891.0	892.4
2	891.3	890.1	890.9	891.3	892.2	894.2	891.6	898.3	903.6	906.7	907.4	908.3
3	907.6	910.3	912.9	909.2	905.7	911.0	911.9	909.9	912.2	912.3	914.3	926.9
4	911.9	915.1	911.0	916.0	918.0	919.6	916.4	914.5	912.9	912.3	914.3	919.1
5	922.4	922.6	922.9	918.4	916.0	926.6	929.3	918.5	920.2	925.6	923.9	919.1
6	918.1	916.0	917.2	916.5	914.6	915.3	914.1	920.1	920.9	925.1	923.8	920.0
7	919.1	923.9	922.9	920.1	912.2	921.5	917.2	914.5	919.2	921.5	920.1	919.6
8	922.0	924.4	922.4	922.3	926.7	925.4	926.9	926.6	922.7	921.3	925.3	924.2
9	930.5	928.2	929.7	929.9	932.0	929.9	934.5	930.9	932.8	933.5	934.0	934.7
10	935.6	934.7	932.6	936.0	937.6	935.1	932.1	932.6	930.5	932.6	931.3	931.5
11	930.1	931.3	932.1	930.9	930.2	932.2	930.6	932.1	924.6	931.7	934.8	933.2
Noon.	929.1	922.7	923.5	902.3	911.8	906.4	920.9	912.5	913.3	912.1	913.6	911.4
13	920.1	922.2	923.6	921.5	918.9	919.6	912.3	911.4	914.0	904.1	896.5	898.3
14	895.5	907.4	917.4	948.4	949.0	951.8	950.9	947.8	944.7	939.0	902.4	921.7
15	924.6	931.7	929.7	923.2	932.4	944.6	930.2	919.4	908.3	910.3	903.7	907.6
16	919.1	920.6	924.2	920.0	912.2	912.2	905.9	905.2	896.5	886.4	884.6	881.8
17	887.0	889.1	880.4	869.5	865.2	869.5	877.0	881.1	889.7	873.6	868.8	864.0
18	859.9	874.9	874.7	872.3	881.6	885.3	889.7	889.4	899.3	905.2	906.5	897.0
19	889.9	887.6	895.2	893.1	890.0	891.9	893.9	887.3	898.3	887.5	893.8	903.7
20	900.3	896.2	901.9	898.2	892.1	889.5	890.0	888.4	889.9	893.1	894.9	897.3
21	887.1	893.4	889.9	880.4	891.5	888.2	889.1	891.1	899.4	888.4	888.4	896.1
22	905.9	917.6	913.9	908.6	905.0	914.5	922.8	922.8	927.3	929.5	929.5	933.5
23	933.6	937.3	934.2	930.2	936.0	953.7	953.2	938.3	936.2	945.5	950.7	954.7

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81^\circ 44' 00''$ $\lambda = -64^\circ 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

FEBRUARY 1, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	789.0	788.4	785.3	783.6	788.5	789.6	789.9	791.8	795.8	795.8	796.2	794.3
1	797.4	801.7	801.7	795.6	799.0	805.6	805.0	814.8	821.0	804.6	802.0	801.8
2	802.4	798.8	799.3	798.9	796.7	791.9	786.5	783.0	782.9	785.7	783.1	786.0
3	790.8	796.2	799.8	795.4	797.9	800.9	800.5	797.3	796.7	795.4	798.5	797.0
4	807.1	817.2	815.4	809.3	795.4	787.9	795.6	806.4	804.8	815.7	815.4	818.6
5	823.2	810.2	799.3	793.5	779.4	781.6	779.8	780.9	782.0	781.6	784.1	784.8
6	789.0	788.3	786.8	787.8	789.4	789.8	793.0	792.2	788.8	791.5	795.3	792.2
7	787.8	790.3	797.4	793.5	789.4	794.0	792.4	791.8	793.5	788.5	788.4	788.3
8	797.3	783.7	803.6	792.2	794.9	791.6	791.5	784.8	784.1	793.5	785.2	794.0
9	793.0	789.9	802.1	796.3	793.8	790.5	786.7	782.0	799.3	799.0	796.0	794.0
10	794.7	796.3	804.0	802.8	797.5	803.3	798.8	803.2	802.1	799.7	805.9	801.7
11	798.4	796.8	794.2	795.6	790.3	791.1	796.3	797.7	791.6	791.9	798.2	797.3
Noon.	798.9	796.2	796.0	769.0	796.3	795.7	792.3	794.2	793.8	786.9	792.2	791.5
13	789.2	787.4	790.5	785.3	792.0	801.6	796.0	790.1	789.6	783.1	797.8	787.9
14	797.5	785.1	787.6	796.6	801.5	802.9	795.8	790.9	788.3	774.3	771.7	792.2
15	790.5	775.9	768.3	771.5	769.6	759.0	758.6	761.8	746.3	743.4	737.7	741.0
16	753.5	764.6	778.7	800.0	806.1	800.2	797.0	790.3	779.8	773.7	761.2	756.7
17	740.1	722.4	733.1	730.8	715.4	710.8	713.9	718.5	726.8	734.8	727.0	721.5
18	712.1	701.2	712.3	700.2	701.8	707.3	687.0	668.7	652.4	631.4	588.4	568.3
19	565.2	576.6	594.2	621.4	633.4	687.7	715.3	767.8	781.4	782.5	786.8	807.4
20	810.8	804.7	814.2	818.6	786.2	735.8	702.8	701.3	702.1	698.9	700.2	698.1
21	710.6	714.0	716.3	723.3	736.5	745.6	735.4	714.3	686.5	671.8	653.9	646.1
22	639.9	649.1	650.2	652.8	655.2	674.0	702.6	713.7	721.9	727.5	741.6	746.8
23	742.6	742.4	759.6	761.6	777.8	775.3	783.0	790.6	807.2	793.3	793.2	794.6

FEBRUARY 15, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	*806.8	809.1	807.3	807.5	806.1	798.2	783.6	782.6	782.5	779.8	786.9	783.1
1	785.4	790.8	791.9	800.4	800.6	790.4	784.0	799.4	803.6	801.3	805.9	794.4
2	798.1	804.6	803.2	802.8	799.5	796.2	795.2	798.2	811.2	807.1	815.3	810.3
3	804.4	807.1	823.7	823.7	821.2	817.6	821.9	822.7	825.2	809.3	799.8	791.2
4	783.6	783.1	785.1	782.5	788.1	798.8	803.3	800.5	795.5	800.5	801.3	799.3
5	786.8	796.6	794.6	799.7	801.1	802.3	799.8	796.4	794.7	791.1	788.1	793.7
6	799.7	799.7	797.0	792.2		796.1	796.1	800.5	805.9	804.8	805.0	805.7
7	806.0	804.0	808.3	820.9	824.0	808.6	807.2	805.0	807.0	801.8	804.3	807.0
8	796.3	803.2	809.7	810.8	809.7	808.7	810.4	812.7	807.6	800.5	792.0	784.0
9	790.8	792.2	790.6	786.3	793.7	795.4	796.4	801.9	800.9	803.4	806.6	803.2
10	798.8	798.8	803.9	806.0	802.1	800.2	798.2	796.3	803.0	802.1	796.3	800.8
11	799.5	801.1	794.6	796.6	797.8	797.4	797.0	797.7	798.8	795.4	798.1	796.4
Noon.	798.9	787.4	790.0	796.6	799.5	800.8	791.8	793.6	795.0	795.2	796.4	796.6
13	798.8	795.4	791.8	793.0	791.8	796.8	798.8	800.0	796.3	795.0	793.7	795.2
14	794.8	795.0	796.6	800.1	795.9	795.4	794.0	788.2	788.1	785.6	787.1	796.7
15	795.5	794.0	798.6	787.5	786.4	787.4	797.8	797.4	794.3	795.8	799.1	797.0
16	793.6	800.2	807.9	798.5	789.7	800.4	796.3	799.1	796.4	794.1	792.7	793.3
17	795.2	788.6	778.6	785.7	791.6	790.0	787.6	773.5	775.5	781.7	793.5	794.4
18	798.9	794.6	799.5	800.2	800.0	799.0	798.2	797.3	797.5	792.3	791.2	792.6
19	791.3	792.4	793.6	790.8	791.3	786.4	787.8	788.2	774.4	780.2	779.4	774.4
20	776.0	776.0	773.8	789.3	788.6	787.4	781.4	775.9	770.3	775.2	788.6	804.1
21	800.5	797.9	791.6	797.5	794.0	791.5	794.4	788.4	786.4	785.2	781.4	785.2
22	795.9	799.3	804.0	807.5	811.4	809.5	800.5	803.4	800.0	800.2	806.1	805.2
23	809.7	806.6	799.8	788.9	777.2	773.1	769.3	767.0	764.5	769.7	768.9	768.7

*Or 813.4?

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

MARCH 1, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	762.2	763.1	756.2	757.8	762.3	757.4	765.9	783.8	792.7	802.1	795.3	774.8
1	767.4	765.1	789.0	798.6	798.9	812.7	825.3	810.3	807.8	805.3	805.6	811.2
2	801.8	794.7	790.7	793.5	812.7	816.2	807.5	806.5	809.6	840.4	847.7	847.8
3	846.1	858.3	859.2	849.3	847.1	858.8	863.4	871.3	873.6	881.1	881.8	863.3
4	856.4	858.8	843.3	830.2	823.1	823.1	826.4	830.8	837.6	825.8	823.5	818.1
5	823.7	836.4	830.9	826.4	831.4	844.9	850.8	851.9	848.8	839.3	834.6	828.5
6	849.0	865.8	849.6	848.9	841.4	839.6	853.3	873.2	886.9	877.9	877.7	876.7
7	883.1	879.0	870.7	871.6	876.7	885.9	889.3	890.7	883.4	867.3	860.5	843.8
8	843.3	835.9	827.7	829.4	818.2	806.8	810.7	811.3	818.1	810.9	812.9	810.6
9	805.0	815.4	828.2	833.5	839.1	835.5	843.4	840.7	848.5	843.5	838.0	837.6
10	829.0	831.7	837.6	839.5	839.7	830.0	832.6	828.9	823.1	820.9	814.3	812.6
11	810.7	812.5	816.3	806.8	810.6	808.6	798.6	789.1	795.7	806.5	805.0	810.2
Noon.	808.1	811.0	800.8	807.4	750.1	731.2	765.2	743.1	737.8	767.6	762.9	748.5
13	727.0	739.4	730.5	721.2	749.8	764.6	758.4	756.6	777.8	781.6	795.3	803.6
14	805.2	813.7	819.6	814.6	819.1	802.4	790.8	790.5	785.6	784.3	780.6	768.7
15	775.0	722.3	689.7	604.1	650.6	670.4	707.3	699.3	723.0	731.1	694.8	666.5
16	643.5	653.0	644.5	669.1	686.9	711.2	758.1	749.0	746.7	738.8	755.2	751.9
17	751.1	723.8	745.4	758.5	781.3	777.0	782.5	811.2	794.4	795.5	793.6	753.1
18	746.5	749.6	758.3	762.6	773.5	733.9	718.2	765.4	705.1	719.1	730.4	737.0
19	725.1	709.0	651.2	645.2	596.7	592.1	565.2	585.8	575.9	585.7	586.2	609.0
20	632.6	675.7	650.3	669.5	653.0	682.2	707.5	737.2	739.5	731.7	725.1	732.9
21	733.2	733.3	748.9	761.3	756.1	769.6	781.0	780.2	784.5	789.4	784.8	773.0
22	760.7	756.7	762.9	780.6	795.8	809.4	804.6	801.6	823.5	825.5	847.7	874.0
23	856.5	820.1	813.4	802.9	809.8	811.1	807.2	801.1	778.0	782.4	797.9	822.7

MARCH 15, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	824.4	823.6	822.8	821.5	823.7	828.1	816.6	810.0	809.6	805.7	806.1	804.5
1	805.4	808.5	804.7	801.7	803.3	806.7	802.4	802.3	803.3	804.3	807.5	807.1
2	801.6	--------	798.3	794.1	794.8	798.6	801.8	798.6	798.6	798.0	796.9	797.4
3	794.2	808.3	805.6	805.6	808.3	796.8	800.9	825.1	835.2	835.9	834.9	815.3
4	813.0	808.9	811.3	822.0	840.0	832.6	814.2	810.3	804.7	810.9	817.0	813.8
5	806.5	823.3	883.3	862.9	879.9	876.2	875.9	871.2	855.7	844.1	851.6	868.4
6	861.5	860.1	851.2	867.2	844.1	844.9	832.7	831.7	827.7	792.5	797.2	803.5
7	816.8	845.3	833.3	821.7	821.4	825.4	822.3	831.0	838.7	855.0	854.4	851.3
8	825.2	835.8	829.8	824.9	809.7	808.0	803.6	800.5	794.4	803.2	804.0	808.3
9	807.3	807.8	808.3	813.5	810.7	819.0	823.7	831.9	817.6	828.5	833.0	836.0
10	822.7	809.1	797.3	803.6	801.1	793.6	781.9	782.7	781.7	802.4	797.8	794.6
11	795.5	782.1	789.9	817.8	815.0	818.3	805.9	803.9	792.3	795.0	792.2	806.6
Noon.	807.5	802.0	798.8	793.0	792.7	795.0	795.8	789.8	780.9	780.3	786.3	791.3
13	813.5	805.3	801.2	807.9	809.3	795.4	784.0	784.5	785.8	787.7	783.0	787.4
14	790.9	788.5	788.7	780.6	787.4	793.0	786.3	777.3	781.8	786.9	793.3	786.3
15	777.1	775.8	773.1	774.3	768.3	769.3	763.0	764.9	760.7	758.3	757.4	764.7
16	765.8	761.4	755.6	770.0	777.6	772.0	767.2	776.9	779.1	770.0	777.9	776.8
17	785.0	782.0	785.0	786.5	786.6	782.2	779.4	770.4	768.6	767.4	775.0	779.5
18	786.2	790.0	779.9	781.7	785.1	773.5	766.9	761.4	769.9	777.1	778.0	776.8
19	773.9	771.0	773.5	775.6	788.1	786.2	787.7	787.8	788.8	781.4	782.9	775.9
20	773.9	759.1	751.9	757.0	773.2	770.3	783.2	778.4	788.8	787.3	772.0	772.4
21	783.6	792.7	797.5	808.0	811.0	815.1	809.6	806.4	803.7	799.6	803.7	805.5
22	812.2	808.1	800.9	805.7	805.2	807.6	808.4	814.8	808.7	796.9	802.6	805.3
23	809.1	815.0	817.8	815.5	813.0	811.7	812.2	811.1	813.8	813.9	813.7	817.2

Term-day observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

APRIL 1, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	837.0	821.8	805.6	797.9	796.3	797.9	798.2	799.1	802.3	804.3	811.7	813.2
1	816.8	819.1	819.5	815.2	807.3	804.0	801.1	797.2	796.4	799.1	803.6	821.1
2	818.8	816.8	816.0	814.9	818.5	821.6	822.2	844.6	842.8	842.1	862.9	864.7
3	871.2	864.7	870.8	877.7	875.3	867.1	866.7	860.1	843.7	822.9	806.6	799.1
4	822.9	830.0	830.7	830.0	820.2	816.1	812.4	817.1	837.8	842.3	857.2	858.1
5	854.1	845.2	816.4	819.3	831.3	828.5	838.9	835.5	835.2	811.3	803.6	804.3
6	808.1	813.6	818.3	816.3	801.9	800.8	798.6	798.6	806.3	826.0	831.4	836.0
7	833.3	838.7	825.8	831.4	844.2	845.6	845.1	840.6	843.2	844.5	852.2	855.5
8	859.6	853.9	847.4	817.2	818.7	828.8	818.9	831.9	849.9	867.0	862.5	860.4
9	856.8	861.2	844.1	851.8	846.1	832.9	829.7	823.2	818.7	822.0	819.3	819.0
10	819.8	816.5	811.8	817.7	815.1	808.0	791.9	791.4	793.5	803.0	805.0	808.7
11	831.0	812.9	766.8	762.6	760.4	773.7	773.6	798.2	796.9	794.2	795.4	804.5
Noon.	809.1	800.4	799.6	786.3	784.0	779.5	776.3	772.5	773.0	771.3	772.3	770.9
13	778.6	780.6	781.3	786.3	788.3	789.1	796.9	808.5	807.9	807.8	805.8	805.1
14	811.4	803.3	805.3	805.3	810.7	811.0	813.7	816.6	816.2	812.9	812.4	808.5
15	805.2	791.2	780.7	767.3	764.1	765.5	768.9	765.5	751.5	751.3	752.9	753.2
16	760.9	763.0	770.2	774.8	767.0	782.3	786.0	796.5	787.8	781.7	776.1	777.7
17	777.8	784.6	794.0	791.9	776.3	763.0	750.2	746.2	744.6	746.7	751.7	742.4
18	743.5	745.0	746.1	748.4	750.6	752.5	737.1	746.6	758.4	759.1	757.6	772.3
19	759.9	764.5	759.7	769.6	772.3	780.6	781.3	787.0	785.0	786.0	786.7	788.8
20	788.8	783.4	781.8	784.5	777.0	779.9	777.5	779.1	775.5	762.2	762.2	758.3
21	768.5	773.4	775.9	776.2	781.3	782.8	791.6	803.5	807.9	807.8	807.6	810.2
22	817.2	820.5	824.1	820.4	820.8	821.2	819.3	820.4	823.7	817.5	815.2	812.6
23	807.5	806.0	808.5	806.2	806.0	810.8	798.9	786.0	781.7	779.4	777.8	781.8

APRIL 15, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
		′	′	′	′	′	′	′	′	′	′	′
0	879.4	877.7	880.4	880.1	881.8	880.8	883.1	884.1	883.1	884.8	889.3	892.7
1	893.0	894.6	897.9	896.5	893.1	907.8	893.4	895.3	897.6	900.2	903.4	902.6
2	902.4	904.7	906.6	903.8	909.0	911.9	912.5	910.8	914.9	917.7	915.6	909.5
3	907.7	907.4	903.9	913.5	917.9	916.1	920.3	925.2	928.0	929.4	921.9	921.9
4	920.3	921.4	928.0	924.9	923.4	924.5	924.3	925.2	928.6	932.3	929.7	929.7
5	927.0	926.9	925.7	924.6	921.9	924.7	924.7	922.8	920.4	923.6	925.8	923.8
6	926.6	923.9	923.1	927.2	927.6	926.2	925.0	924.1	922.6	927.3	929.3	927.2
7	918.4	929.4	928.1	930.5	932.0	931.6	923.4	924.9	919.5	922.2	923.6	927.2
8	927.4	937.3	942.3	942.3	942.6	935.2	930.2	928.7	930.1	934.0	946.6	947.8
9	956.0	954.2	944.6	939.4	930.5	929.7	931.7	916.9	930.3	944.9	961.4	965.0
10	*970.4	973.1	971.8	966.5	979.5	971.3	956.7	961.0	974.4	956.8	957.5	957.5
11	942.8	954.0	939.8	932.3	930.1	927.0	921.4	913.3	916.1	922.4	926.3	927.3
Noon.	933.7	929.8	934.0	934.1	933.4	929.1	931.8	929.4	933.0	928.7	926.2	930.9
13	928.2	928.6	930.9	933.7	938.5	940.0	930.1	923.5	915.9	917.0	923.4	931.6
14	930.2	927.8	931.0	924.8	917.0	915.2	913.8	914.2	914.3	917.7	915.3	915.7
15	904.1	891.4	877.6	873.4	864.8	874.7	884.9	883.3	882.0	871.1	864.3	848.5
16	828.9	832.2	834.0	847.8	848.9	850.4	797.4	808.7	828.8	867.4	872.6	896.4
17	912.4	917.8	926.0	926.2	937.2	965.7	968.4	953.2	945.8	952.2	956.0	950.6
18	959.2	953.6	949.0	936.5	925.7	930.2	935.8	939.5	943.6	919.2	920.9	927.5
19	927.0	910.0	924.0	943.8	948.9	952.9	968.4	968.5	951.4	972.2	971.9	971.8
20	972.0	975.5	983.9	988.5	963.2	949.1	949.7	975.2	967.8	959.4	965.1	-------
21	†959.8	967.5	959.6	960.1	967.3	967.4	960.9	959.3	964.3	971.0	975.1	972.3
22	968.7	965.3	978.7	985.7	964.8	960.4	957.8	960.0	948.1	943.2	940.1	941.6
23	939.7	951.5	947.9	943.2	944.7	951.1	958.5	960.1	965.3	972.1	972.4	968.7

*At 9 hours, 59 minutes. †At 20 hours, 59 minutes.

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\varphi = 81^\circ\ 44'\ 00''$ $\lambda = -64^\circ\ 43'\ 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

MAY 1, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	849.5	842.6	843.5	850.1	862.1	868.0	866.6	864.9	857.3	848.0	839.4	844.7
1	847.6	844.7	845.4	842.4	843.7	848.4	852.3	847.3	851.1	858.4	867.5	864.9
2	868.0	865.3	865.9	852.6	853.6	847.8	861.5	867.7	869.2	865.0	862.5	875.0
3	865.7	859.4	859.8	865.4	850.1	844.0	850.8	843.0	841.9	844.2	852.9	861.0
4	867.0	863.2	850.8	850.6	857.7	857.3	864.5	872.1	874.5	890.3	890.7	893.0
5	887.1	877.5	875.4	874.2	885.7	900.4	913.6	919.0	895.9	899.1	913.5	942.9
6	965.9	973.2	972.5	965.7	962.1	949.1	942.3	925.3	918.7	924.8	931.6	929.9
7	923.6	923.8	915.9	896.3	877.2	872.5	879.5	868.4	858.8	867.2	870.1	878.3
8	872.7	882.6	885.8	885.3	895.7	903.3	936.0	943.9	946.8	930.3	917.7	891.5
9	883.7	886.8	897.4	909.4	910.1	916.7	917.7	909.8	915.8	927.8	921.3	921.6
10	905.6	898.8	905.3	910.1	909.6	903.0	882.4	875.9	874.2	855.3	852.3	850.1
11	855.2	864.5	873.8	877.2	885.4	886.9	893.9	874.2	886.6	888.1	896.1	881.3
Noon.	872.5	875.5	876.3	874.4	866.9	872.5	885.8	887.6	874.8	870.5	866.1	876.0
13	869.6	856.1	838.9	840.9	849.2	854.1	863.2	884.7	894.3	898.1	889.2	874.5
14	863.4	858.8	862.3	870.1	870.7	878.7	881.3	881.4	878.3	866.9	865.1	862.1
15	852.4	846.6	842.3	843.4	843.7	847.1	848.0	848.8	849.3	840.2	826.3	810.0
16	810.0	818.3	824.9	831.5	839.7	852.3	856.7	859.2	851.1	855.1	855.1	847.2
17	847.2	840.5	841.5	840.1	833.2	827.3	820.0	812.0	799.4	792.6	780.0	766.0
18	759.7	766.3	763.6	767.5	763.4	768.6	768.7	775.2	770.3	772.6	781.1	788.8
19	781.6	787.0	783.9	781.2	777.3	776.4	775.7	773.1	776.9	769.1	768.7	766.4
20	770.2	766.3	745.6	752.2	748.9	740.2	742.0	755.8	756.0	779.2	775.0	768.5
21	755.5	740.4	743.8	747.9	753.3	764.0	783.7	781.8	774.1	773.6	768.5	767.3
22	761.1	756.1	746.6	751.8	756.1	758.2	768.9	777.5	776.7	782.1	790.8	818.3
23	811.8	801.3	804.0	798.5	798.6	806.6	808.2	827.8	827.1	838.3	832.3	819.7

MAY 15, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	817.7	816.6	813.7	818.9	820.1	821.5	822.0	822.8	825.8	822.0	818.3	812.8
1	816.6	811.8	811.4	810.7	813.7	816.8	820.0	824.3	824.2	821.9	813.4	816.6
2	814.9	805.3	806.2	802.0	797.0	792.3	794.3	793.7	801.3	804.0	808.2	812.9
3	805.2	801.1	805.0	801.8	806.6	815.0	820.3	815.7	810.1	806.8	808.9	805.9
4	802.2	811.0	814.9	821.5	817.2	822.7	816.8	820.3	820.3	828.6	840.3	842.2
5	833.3	823.2	831.3	830.5	829.2	834.8	839.4	842.0	835.3	835.3	829.8	834.9
6	835.2	825.7	813.0	817.2	840.3	850.4	852.1	847.4	843.3	840.5	833.6	818.9
7	820.1	820.0	822.0	832.0	826.6	827.4	818.6	812.5	819.3	821.6	829.0	829.0
8	834.5	827.1	832.7	837.6	839.2	842.0	844.9	845.1	842.6	834.1	825.5	814.8
9	824.4	824.4	826.2	835.3	843.9	849.1	851.8	857.6	857.7	852.9	872.0	870.5
10	866.9	856.4	855.1	848.8	841.6	838.4	835.3	849.4	853.8	857.9	954.4	866.1
11	865.9	858.4	858.3	852.8	836.1	838.3	845.4	853.5	853.1	857.0	859.3	855.1
Noon.	[illegible]	849.5	850.1	859.7	845.4	852.2	836.8	837.6	838.4	842.0	832.3	826.4
13	818.9	815.3	809.7	809.9	815.9	813.7	808.6	806.8	815.8	815.3	815.0	815.4
14	810.8	802.7	800.4	798.3	797.8	791.7	795.6	805.0	804.1	798.3	794.9	791.8
15	794.4	803.7	793.3	803.0	801.8	807.7	809.3	806.9	810.8	808.4	808.6	803.1
16	786.3	774.5	767.0	765.9	764.5	760.4	759.1	747.3	744.5	743.9	747.1	751.5
17	752.2	753.3	750.1	742.6	741.2	739.5	735.7	727.5	726.2	727.7	731.2	737.6
18	746.8	735.0	739.2	740.6	726.2	716.3	712.6	698.8	696.9	703.5	702.1	687.9
19	710.0	718.2	721.4	729.5	729.1	733.3	734.7	727.7	740.7	738.4	739.9	736.3
20	732.4	727.0	721.6	728.4	737.7	722.5	701.8	705.0	743.3	776.2	788.1	807.5
21	811.5	820.4	823.5	825.9	824.4	828.7	826.7	828.0	820.8	815.4	818.1	822.6
22	828.9	831.7	823.5	822.4	831.9	834.8	834.9	832.1	838.9	832.3	835.0	828.6
23	825.5	819.6	816.9	814.0	812.3	812.5	817.8	818.9	821.5	827.7	826.8	826.4

Term-day observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

JUNE 1, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	782.2	783.0	781.7	786.4	817.9	820.5	790.9	782.7	788.1	792.5	800.0	798.0
1	798.0	797.3	785.8	773.5	765.4	763.5	759.1	756.6	760.2	772.9	782.7	783.7
2	782.4	779.2	776.2	777.5	784.1	782.7	780.3	768.9	762.6	764.7	766.9	775.1
3	775.1	781.6	782.0	786.5	786.1	778.5	772.0	769.6	769.6	767.3	768.0	779.5
4	811.1	814.4	828.7	838.4	845.1	844.0	837.3	837.4	838.4	836.9	822.6	814.8
5	807.1	793.3	793.3	802.6	806.4	810.1	808.3	800.1	806.6	795.9	798.4	807.2
6	809.9	806.2	818.2	823.0	829.8	850.4	849.3	847.3	836.9	830.3	786.1	775.4
7	775.2	774.0	764.5	762.5	758.7	757.6	750.8	748.4	750.5	755.8	743.9	739.9
8	746.4	747.1	748.4	745.4	740.5	749.8	754.4	772.1	767.2	768.5	765.4	771.6
9	752.1	782.9	795.5	768.1	759.2	752.1	747.3	763.0	778.2	780.0	803.0	808.3
10	823.4	824.7	818.1	809.9	794.4	787.5	775.9	779.4	801.5	828.2	848.6	869.1
11	861.9	870.9	864.9	875.3	858.3	855.8	845.9	841.4	840.2	828.8	820.5	822.2
Noon.	821.0	831.5	841.9	847.3	848.2	830.9	828.2	829.6	818.2	814.7	817.2	816.8
13	831.2	816.5	810.8	810.1	806.3	803.8	791.5	800.3	792.6	774.3	759.8	763.1
14	777.1	767.5	764.3	735.7	734.4	742.2	750.5	758.9	750.9	757.2	757.9	749.3
15	750.3	745.5	750.3	757.0	756.7	759.3	767.8	767.1	761.6	760.4	753.7	750.5
16	743.4	744.2	745.0	750.6	754.5	750.6	738.0	748.8	746.1	745.0	747.4	742.2
17	733.5	735.3	749.6	746.3	726.0	746.1	740.7	731.9	728.4	727.3	731.7	716.1
18	720.4	721.4	722.0	708.1	698.0	702.3	703.3	707.5	711.4	716.8	727.8	727.6
19	715.3	703.1	693.6	670.2	671.7	673.8	660.9	667.5	681.4	668.6	658.8	643.7
20	645.6	641.7	642.0	638.0	639.2	646.3	646.6	646.8	647.3	650.1	673.7	654.8
21	650.5	647.3	637.0	637.0	637.7	635.6	647.9	670.2	667.0	678.1	690.4	669.2
22	667.5	667.4	672.6	670.9	676.5	665.7	686.7	681.2	670.6	679.9	693.1	695.2
23	697.1	699.8	715.9	715.2	717.8	709.5	710.1	704.3	716.7	713.8	715.1	726.0

JUNE 15, 1883.

Hour.	0m	5m	10m	15m	20m	25	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	793.0	797.7	803.9	793.0	790.6	793.4	787.4	782.8	789.1	786.7	796.4	805.9
1	809.8	814.5	816.6	815.4	818.8	815.4	816.3	809.9	813.3	817.3	816.8	820.3
2	813.4	820.8	818.3	827.6	831.4	825.7	830.3	852.4	860.3	860.1	859.3	862.0
3	849.4	826.4	844.0	855.7	854.5	871.3	840.1	832.0	822.4	814.4	819.7	815.5
4	814.6	814.4	806.9	811.9	824.0	829.2	835.9	845.2	837.0	860.9	860.0	874.8
5	840.8	834.6	826.2	824.8	821.8	830.4	829.2	823.5	826.8	831.3	830.7	824.1
6	827.5	827.9	824.0	826.8	829.3	832.0	831.8	826.5	826.4	827.5	828.3	827.2
7	826.5	821.4	816.9	801.8	804.5	799.1	805.8	812.8	794.1	800.3	802.9	801.3
8	812.8	809.1	802.5	791.2	795.9	797.7	793.7	789.6	802.1	811.4	823.7	837.5
9	836.9	812.2	810.0	809.5	795.5	772.3	766.6	760.2	753.8	739.0	738.1	745.1
10	740.4	748.5	737.3	751.7	751.4	775.2	765.9	771.3	772.9	771.5	760.5	------
11	778.2	778.2	776.0	776.6	762.2	751.3	724.4	703.9	730.6	734.5	726.3	733.1
Noon.	745.4	745.8	760.4	768.1	757.2	750.7	735.8	743.6	746.1	742.5	734.6	746.1
13	750.3	755.4	753.6	752.6	757.5	758.7	764.0	762.5	763.7	771.5	771.4	761.4
14	767.7	779.7	780.4	782.6	779.9	786.6	789.3	791.7	786.7	783.7	783.4	784.8
15	787.9	784.1	785.1	780.8	776.9	768.0	769.8	758.9	761.4	767.3	770.1	773.5
16	772.9	771.4	774.0	777.5	765.9	763.9	769.7	774.5	770.7	776.7	781.2	783.0
17	774.5	769.8	760.4	765.7	772.1	774.4	775.5	764.4	756.6	756.2	754.9	759.2
18	765.9	767.0	770.0	772.6	773.2	770.1	752.0	743.8	732.8	745.2	753.8	754.9
19	760.3	773.7	798.3	791.9	772.5	758.0	745.1	738.5	719.1	709.1	709.8	704.0
20	696.2	702.8	720.9	764.6	764.3	759.2	760.7	751.1	741.3	745.6	748.5	754.9
21	762.9	775.6	793.7	811.5	814.3	816.6	823.4	827.5	818.2	815.9	801.2	808.6
22	802.3	799.1	803.3	810.9	805.8	808.6	805.7	803.6	797.2	791.9	797.5	799.8
23	800.6	808.2	800.2	813.6	802.0	788.2	794.8	800.2	785.5	766.6	758.8	741.2

Term-day observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

JULY 1, 1883.

Hour.	0^m	5^m	10^m	15^m	20^m	25^m	30^m	35^m	40^m	45^m	50^m	55^m
	′	′	′	′	′	′	′	′	′	′	′	′
0	791.2	802.8	812.9	826.1	819.1	826.1	818.8	789.9	745.4	736.0	733.1	731.5
1	724.9	714.9	698.8	727.6	742.6	757.6	761.2	770.8	795.3	837.0	813.8	841.6
2	840.0	842.2	866.0	966.4	875.2	877.3	901.4	858.3	888.5	883.8	874.8	894.0
3	861.9	872.9	909.7	905.8	910.0	914.0	890.4	871.0	854.5	850.9	904.0	924.8
4	930.7	898.5	875.4	835.3	855.3	895.2	900.3	907.3	917.8	902.8	886.0	897.3
5	911.9	938.4	915.8	917.0	921.0	931.1	926.5	957.3	960.3	960.5	980.6	969.4
6	983.7	930.3	905.3	867.9	961.0	936.3	967.8	961.7	950.0	958.5	947.9	857.7
7	806.6	793.9	773.9	759.8	719.6	662.5	757.1	891.1	936.8	956.1	957.8	933.8
8	931.2	927.2	912.1	891.4	866.4	862.8	8[illegible]9.4	855.7	855.9	866.8	876.4	866.8
9	852.5	857.3	848.7	859.9	868.7	878.8	879.2	874.7	884.0	902.3	917.4	893.9
10	886.9	889.1	879.5	876.9	874.4	880.5	896.3	889.1	896.1	889.0	899.1	909.1
11	887.5	863.5	871.6	856.7	849.1	839.3	835.9	828.5	841.5	846.7	856.7	863.2
Noon.	846.5	842.9	824.0	829.9	826.9	833.6	858.7	839.2	844.3	845.7	857.0	859.8
13	855.6	862.8	860.6	866.9	865.3	857.4	839.9	869.2	839.6	855.1	832.5	834.5
14	817.0	811.5	780.0	779.0	774.1	791.6	815.8	799.8	813.5	796.0	792.1	779.8
15	776.8	793.0	773.0	829.6	799.8	734.1	751.3	747.9	676.0	690.6	634.4	618.0
16	632.7	652.6	632.1	638.3	646.4	658.1	675.6	690.6	694.8	690.8	697.8	700.4
17	714.3	720.1	718.2	692.2	692.4	688.1	669.4	678.6	663.6	666.3	670.1	670.4
18	663.6	683.0	673.3	660.6	671.6	655.6	642.4	645.3	640.6	644.7	659.2	634.9
19	645.4	632.1	645.1	636.9	629.0	609.2	627.2	624.5	619.6	634.0	635.2	656.4
20	659.2	675.1	688.3	655.5	630.6	630.8	662.8	677.5	670.0	661.5	662.4	669.2
21	682.9	689.9	689.6	684.8	692.2	713.4	717.4	716.5	718.9	719.7	717.4	716.2
22	700.7	693.8	695.9	727.5	745.8	742.4	740.6	741.5	748.2	740.6	738.7	751.0
23	745.6	739.5	758.5	795.7	804.0	784.1	800.5	804.3	774.3	763.9	791.0	786.8

JULY 15, 1883.

Hour.	0^m	5^m	10^m	15^m	20^m	25^m	30^m	35^m	40^m	45^m	50^m	55^m
	′	′	′	′	′	′	′	′	′	′	′	′
0	799.2	805.7	810.6	814.6	819.4	814.5	814.9	810.5	806.2	811.5	810.2	818.0
1	818.4	822.3	825.9	823.1	794.3	816.0	823.9	838.5	841.5	830.1	823.5	820.6
2	812.4	811.2	816.3	819.4	819.9	822.8	821.1	823.9	828.9	829.0	821.7	823.1
3	827.2	827.8	833.3	830.1	830.5	833.0	830.6	828.6	831.7	830.1	828.9	828.8
4	828.2	829.2	835.2	837.5	835.9	838.8	841.0	834.9	835.6	832.6	827.0	817.0
5	825.9	820.8	817.0	822.3	823.7	823.5	831.7	829.4	827.7	827.9	825.0	836.5
6	818.3	822.3	817.2	817.0	813.2	819.0	836.8	826.9	833.0	826.5	834.9	840.4
7	845.3	832.6	829.2	833.0	841.6	854.3	849.1	876.4	875.8	871.6	842.5	862.2
8	831.3	837.0	834.7	828.8	842.2	839.1	833.7	839.6	803.1	792.2	800.4	788.2
9	788.0	774.5	785.5	773.1	788.6	785.8	787.1	772.6	782.8	787.1	790.7	786.3
10	775.8	788.6	781.6	779.9	780.0	784.3	782.7	795.7	789.6	791.3	781.6	780.1
11	791.6	782.5	779.7	783.9	781.0	781.7	780.7	784.4	780.4	767.5	786.1	775.0
Noon.	774.9	768.8	775.8	778.8	775.8	774.2	777.6	781.0	784.4	784.4	782.1	779.2
13	783.2	764.4	790.9	789.9	776.6	778.9	781.0	777.9	773.2	776.5	781.7	779.3
14	784.3	783.4	801.1	796.4	791.3	796.9	805.5	795.7	804.6	794.0	783.5	777.4
15	762.2	759.1	760.6	766.1	772.4	773.8	773.5	757.0	799.5	809.9	807.1	794.7
16	785.8	798.9	789.5	781.8	782.1	776.2	756.0	722.8	711.2	741.2	736.8	725.8
17	705.8	673.5	656.1	643.8	639.5	638.3	658.5	637.9	623.1	623.6	563.4	525.2
*18	498.0	531.3	601.8	564.9	575.9	610.0	601.5	563.2	576.5	593.7	660.1	626.5
19	742.3	771.6	775.8	689.8	701.6	646.7	609.9	603.4	624.6	652.3	650.9	688.9
20	726.0	766.7	815.7	917.3	925.8	915.2	879.7	775.9	763.5	740.3	721.2	692.1
21	701.0	709.1	724.7	731.6	834.4	904.3	913.6	927.1	989.9	973.4	972.4	956.8
22	944.9	903.0	864.1	771.2	733.8	717.7	724.8	726.3	715.3	708.9	690.1	702.3
23	692.5	680.5	672.3	695.6	714.4	730.9	790.4	846.7	847.4	843.8	868.3	859.2

* Observations from 18^h to 22^h 55^m, inclusive, taken 1^m 42^s early.

Term-day observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81^\circ\ 44'\ 00''$ $\lambda = -64^\circ\ 43'\ 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

AUGUST 1, 1883.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	741.5	720.1	706.8	711.2	696.2	699.3	698.0	731.7	751.3	761.9	789.5	773.5
1	782.5	773.5	765.3	731.3	746.3	738.0	758.7	746.2	763.7	774.5	775.1	762.7
2	770.7	774.2	776.0	779.8	800.2	792.3	786.7	801.5	830.0	829.9	827.7	826.5
3	833.8	856.3	865.4	876.1	887.0	872.3	860.2	863.2	873.8	870.6	871.2	873.7
4	887.6	887.5	901.8	923.5	920.0	907.6	911.5	915.4	904.3	906.4	886.5	893.2
5	900.5	897.8	868.4	866.3	874.0	866.3	866.7	862.4	862.0	869.1	860.7	852.3
6	845.0	837.2	827.6	819.8	817.8	814.5	823.2	816.5	803.3	780.4	776.4	780.9
7	803.5	820.8	849.0	858.9	816.2	787.6	740.1	748.2	753.0	776.0	787.2	779.4
8	762.7	748.5	760.8	731.3	771.1	793.6	739.7	877.3	868.7	901.3	924.9	947.8
9	968.4	1022.8	1016.0	989.8	970.4	960.9	966.8	951.0	959.8	957.0	922.2	908.7
10	936.0	960.3	970.5	966.2	955.3	946.1	967.6	956.6	938.7	955.1	971.2	1018.7
11	1057.8	1032.0	1010.9	1006.1	1013.2	1024.4	1006.1	985.3	970.2	954.8	978.7	987.8
Noon.	960.6	916.7	898.4	929.5	955.8	934.9	923.9	921.1	920.9	908.6	872.3	829.2
13	814.9	801.6	820.3	754.2	775.1	829.7	895.0	902.5	871.3	845.2	829.6	836.5
14	836.8	835.3	(*)	(*)	736.7	724.2	725.0	712.9	752.4	770.4	776.1	781.3
15	777.8	783.7	786.9	782.9	725.5	689.1	692.0	690.2	721.5	756.1	731.0	723.9
16	723.1	729.7	750.4	729.8	726.0	711.7	693.7	701.6	699.7	664.5	666.1	646.6
17	669.4	717.9	694.9	776.7	775.8	732.7	695.6	669.6	638.1	645.8	682.6	687.1
18	690.5	685.4	645.8	683.3	693.8	715.0	713.1	721.9	739.6	755.6	752.0	771.8
19	770.3	772.0	770.6	757.9	779.7	784.3	803.0	785.9	782.9	774.0	787.9	802.8
20	823.2	807.4	800.2	787.8	801.1	785.1	750.7	704.5	704.9	678.5	618.0	605.8
21	622.4	617.7	619.0	661.4	690.3	687.0	709.5	735.2	727.2	738.6	744.8	735.7
22	728.4	740.7	736.8	746.3	722.2	738.2	722.3	730.0	728.6	731.4	751.6	770.3
23	776.7	791.9	797.9	811.5	842.1	840.6	840.5	851.1	890.8	912.6	914.7	916.9

*Reading missed.

Term-hour observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

	July 1, 1882, 12h (noon).			July 15, 1882, 13h.			August 1, 1882, 14h.			August 15, 1882, 15h.			September 1, 1882, 16h.		
	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s
m.		′	′	′	′	′	′	′	′	′	′	′	′	′	′
0	944.0	944.1	943.7	800.3	799.8	799.0	694.0	697.5	697.3	826.6	827.2	827.3	777.8	777.4	777.1
1	943.2	942.2	942.2	797.6	797.6	797.4	696.6	695.9	695.2	827.1	827.1	827.1	777.2	777.5	777.5
2	941.8	941.4	941.3	796.4	795.5	794.8	696.2	697.8	701.4	826.9	827.2	826.9	777.5	777.8	778.0
3	942.6	943.2	943.0	793.9	792.8	702.5	(*)	(*)	(*)	826.1	826.4	826.6	778.3	778.2	778.3
4	943.7	944.1	944.1	791.4	790.1	788.2	(*)	(*)	(*)	826.1	825.7	825.2	778.6	778.7	779.0
5	944.4	950.3	944.2	787.6	785.9	785.4	718.7	721.7	722.0	825.5	825.7	825.7	779.2	779.2	779.5
6	944.4	945.5	945.6	785.0	784.5	784.8	724.9	725.2	726.4	826.0	826.6	827.5	779.6	779.5	779.6
7	945.2	945.3	944.9	785.0	785.0	784.2	728.0	730.1	730.9	828.2	829.2	828.8	779.8	779.9	779.8
8	944.8	944.5	944.6	783.4	782.6	782.1	735.0	736.1	738.0	828.8	829.3	829.6	779.8	779.5	779.4
9	945.2	945.5	945.5	781.6	781.5	781.2	744.0	745.7	747.3	829.3	828.4	827.7	780.3	780.5	780.1
10	945.3	950.3	943.9	780.2	779.8	778.8	753.9	757.3	764.5	827.5	826.4	824.4	779.6	779.8	780.1
11	943.6	942.8	943.5	778.4	778.1	777.9	764.0	765.6	766.6	823.3	822.1	821.9	780.2	780.3	780.5
12	943.0	942.5	941.9	777.2	776.1	775.2	770.4	770.9	772.0	822.1	822.1	821.7	780.5	780.5	780.2
13	941.0	940.2	938.0	775.0	773.7	773.0	772.5	773.1	773.6	820.0	819.4	819.1	780.2	780.1	779.9
14	936.7	936.0	935.8	772.9	772.8	772.4	776.1	777.1	778.6	819.3	819.5	819.4	780.6	780.2	780.2
15	935.8	935.8	935.9	772.4	772.0	770.7	778.9	779.2	780.7	819.4	820.0	820.6	780.9	781.0	781.0
16	936.2	936.6	936.4	770.2	769.7	769.2	782.8	784.7	785.9	820.6	820.7	821.0	781.2	781.3	781.2
17	936.3	936.0	936.0	768.8	768.5	767.9	787.5	788.0	789.5	821.9	822.5	824.5	780.7	780.5	780.7
18	936.0	936.3	936.9	767.5	767.4	767.3	789.7	789.7	789.9	824.8	825.0	825.6	780.7	781.2	780.9
19	936.7	937.1	937.3	767.0	765.5	764.7	789.8	789.9	790.3	826.0	823.7	823.3	780.9	780.3	780.1
20	937.4	937.7	937.4	764.6	764.6	764.8	789.8	789.7	789.8	823.2	821.2	820.6	780.2	780.2	780.5
21	937.4	936.4	935.8	765.1	766.3	769.7	787.1	785.8	785.0	818.6	817.1	816.3	780.5	780.6	780.7
22	935.4	935.1	933.0	767.3	767.8	767.7	786.2	787.1	789.5	815.6	815.9	816.0	781.0	781.0	781.0
23	932.7	932.4	932.6	767.4	767.0	765.8	789.8	790.1	791.9	817.1	817.8	820.2	780.9	780.9	781.4
24	933.5	933.9	934.0	764.7	764.4	764.2	792.4	[illegible]	790.6	820.7	822.1	823.1	781.6	781.8	781.8
25	933.6	934.3	934.3	763.4	762.6	762.3	788.8	787.3	785.4	823.5	823.8	824.1	781.9	782.0	782.0
26	934.4	934.3	933.5	762.3	761.9	761.7	784.7	784.1	782.1	824.8	824.8	824.6	781.9	782.2	782.3
27	933.1	933.2	932.7	760.7	760.4	760.3	781.6	783.7	782.0	824.8	825.3	824.4	782.2	781.9	781.9
28	930.9	930.6	929.3	760.0	760.2	760.2	782.6	783.2	784.4	823.4	822.8	822.6	781.8	781.8	781.9
29	928.9	928.8	928.8	760.2	760.3	760.3	785.3	786.8	786.9	821.9	821.9	822.5	781.9	781.8	781.6
30	929.1	929.1	929.1	760.2	760.3	760.3	787.0	788.2	789.1	824.5	825.3	826.8	781.6	781.9	781.9
31	929.3	929.8	929.8	760.4	760.4	760.7	789.2	789.5	789.9	827.2	827.5	830.1	782.0	782.0	782.4
32	929.9	929.8	930.5	760.8	761.7	762.0	791.2	792.6	793.0	832.0	832.7	834.1	782.9	783.0	782.9
33	930.9	931.3	931.2	762.2	762.9	763.4	794.3	795.7	797.3	835.3	822.2	837.5	782.9	783.0	783.1
34	931.9	932.3	932.7	764.2	765.7	765.9	799.3	800.2	799.8	838.3	839.7	841.0	783.4	783.5	783.8
35	933.3	933.3	933.3	766.3	766.3	766.5	799.5	799.1	797.1	841.7	841.7	842.5	783.7	784.0	784.1
36	933.3	933.3	933.3	766.3	765.8	765.4	796.8	795.6	795.1	842.6	842.5	843.2	784.1	784.2	784.2
37	933.3	933.5	934.2	764.4	763.1	762.9	795.0	795.5	795.9	843.5	841.6	840.1	783.0	782.6	782.9
38	934.7	934.7	935.8	762.8	762.9	763.1	797.1	798.5	800.5	839.6	839.0	840.6	782.3	782.2	782.4
39	935.9	935.9	935.9	763.1	763.1	763.3	800.6	801.7	802.3	841.2	840.9	839.3	783.0	783.1	783.3
40	936.0	936.2	935.9	763.1	763.4	763.3	803.2	804.6	804.9	839.7	839.4	837.8	784.0	785.0	785.1
41	935.7	934.4	934.0	763.6	762.5	763.1	806.0	806.3	806.2	834.6	833.7	832.1	785.6	786.0	785.8
42	933.3	933.1	933.0	763.1	763.0	763.0	806.2	805.3	804.6	830.4	829.6	828.2	786.0	786.0	786.1
43	931.6	931.0	930.5	762.8	762.6	763.3	804.2	801.4	800.8	826.9	826.0	826.9	786.1	786.1	786.0
44	930.4	929.3	928.7	763.4	764.7	765.7	801.2	802.5	801.2	828.8	829.6	831.5	786.2	786.1	786.0
45	928.1	927.7	927.7	766.5	767.2	767.3	799.8	797.1	796.7	832.4	832.7	833.2	786.8	786.8	786.9
46	927.7	927.7	927.7	767.4	767.2	767.2	797.3	797.3	797.3	832.1	829.7	827.5	786.9	787.1	787.1
47	927.8	928.1	929.1	766.8	766.3	766.0	796.6	795.9	796.3	824.8	821.8	819.1	786.9	787.2	787.2
48	930.4	931.5	932.6	766.0	765.9	766.0	794.7	794.8	793.6	817.0	813.5	812.3	787.6	787.2	786.8
49	934.2	934.2	934.2	766.8	[illegible]	768.6	792.3	791.0	788.5	810.8	809.7	808.1	786.7	786.2	786.4
50	934.0	933.6	934.0	768.9	768.9	769.0	786.9	785.5	783.4	807.4	806.0	804.7	786.2	785.8	786.2
51	934.3	934.6	934.6	768.9	768.8	768.6	782.0	781.6	781.0	804.3	802.7	802.3	785.7	785.7	785.8
52	934.4	934.4	933.9	768.5	768.2	766.8	779.2	778.2	776.4	801.0	800.0	799.3	785.8	786.4	786.8
53	933.9	934.0	934.4	766.2	765.9	765.5	775.4	772.7	772.0	798.2	797.4	797.0	787.1	787.3	787.3
54	934.6	934.6	934.6	765.2	765.7	765.9	770.6	770.5	770.6	795.8	795.8	796.0	788.3	788.5	788.3
55	934.8	935.4	935.7	766.0	765.8	765.8	771.7	772.1	774.5	795.9	795.6	795.5	788.3	788.5	788.4
56	936.3	936.7	935.3	766.5	767.2	768.5	775.2	775.1	775.2	793.8	793.2	792.7	788.4	788.5	788.8
57	933.5	932.8	931.2	768.4	767.7	767.3	775.4	772.7	769.3	792.6	791.6	791.7	788.5	788.4	788.4
58	930.4	929.5	929.2	766.8	765.9	765.8	767.9	766.1	762.9	791.5	790.8	790.4	788.8	788.4	788.3
59	928.7	927.7	926.4	765.7	765.7	766.2	760.0	756.9	752.5	790.1	790.1	819.3	788.1	787.4	787.3

* Light extinguished.

Term-hour observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

	September 15, 1882, 17h.			October 1, 1882, 18h.			October 15, 1882, 19h.			November 1, 1882, 20h.			November 15, 1882, 21h.		
	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s
m.	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
0	802.2	802.4	802.5	813.0	812.7	812.9	787.2	785.5	784.6	733.8	734.4	735.7	913.3	921.7	927.6
1	802.7	802.9	803.2	813.0	813.0	813.0	783.7	783.0	782.3	736.6	737.9	739.0	933.5	938.3	939.6
2	803.3	804.0	805.1	813.0	813.1	813.3	781.6	780.5	780.0	740.3	741.2	742.7	939.6	941.6	949.5
3	805.2	806.5	807.6	813.4	813.5	813.8	778.9	778.2	778.4	743.7	744.8	747.2	955.9	976.9	978.5
4	808.2	808.[illegible]	808.7	814.2	814.5	814.6	777.8	777.7	777.3	749.0	751.3	752.8	959.0	960.8	958.2
5	809.9	808.8	809.1	814.5	814.4	814.4	777.2	777.1	776.9	753.3	754.3	754.3	959.0	958.8	959.8
6	809.8	809.9	810.0	814.4	814.2	814.1	776.5	776.2	776.0	755.2	755.7	757.0	960.8	967.3	971.4
7	810.2	810.3	810.4	814.0	813.8	813.7	775.7	776.0	776.0	759.6	760.9	762.5	981.4	977.5	981.7
8	811.0	811.3	811.5	813.7	813.8	813.8	776.0	775.7	775.5	763.2	764.5	764.7	980.5	876.8	970.4
9	811.6	811.5	811.4	813.7	813.7	813.3	775.3	775.4	775.4	765.6	766.5	767.0	968.3	971.8	974.8
10	811.3	810.7	810.4	812.3	811.8	812.0	775.1	774.9	775.3	767.8	767.9	769.1	977.9	978.0	980.2
11	810.4	809.8	809.1	812.0	812.5	812.7	775.1	775.3	775.3	770.6	773.2	773.2	983.3	984.9	981.7
12	808.7	808.2	807.9	812.9	812.9	812.7	775.4	775.4	775.5	773.3	773.7	774.9	979.0	974.7	971.1
13	807.6	807.6	807.5	812.5	812.5	812.4	776.1	776.4	777.1	776.1	776.2	775.1	963.9	959.8	946.1
14	807.6	807.5	806.9	812.0	812.[illegible]	812.1	777.5	777.7	778.2	773.7	772.4	769.5	938.3	930.9	929.6
15	806.1	805.5	804.9	812.3	812.4	812.3	779.9	780.9	781.5	767.0	764.9	763.5	930.4	931.3	929.2
16	804.1	802.4	801.7	812.1	812.1	812.1	782.4	782.8	783.2	761.1	759.8	759.1	917.6	907.9	903.6
17	799.7	799.3	799.0	811.8	812.0	811.7	783.3	783.5	783.3	758.5	758.1	758.1	904.9	913.9	921.4
18	799.3	801.4	802.7	811.6	811.7	811.7	783.2	783.3	783.2	758.3	757.7	757.9	925.9	928.6	931.5
19	804.7	806.8	807.6	811.8	811.8	812.0	782.8	781.9	781.3	758.1	758.4	759.4	937.5	941.5	943.5
20	808.0	809.5	810.4	812.0	812.0	812.1	781.3	781.5	781.9	760.7	761.2	762.3	940.7	939.2	936.8
21	811.4	812.2	813.6	812.0	812.3	812.3	781.9	782.0	782.1	762.9	763.2	763.9	936.3	935.3	934.8
22	814.0	814.3	814.3	812.3	812.3	812.9	782.0	781.6	781.5	764.5	765.8	766.5	934.4	933.8	931.0
23	814.7	814.7	814.6	813.0	813.3	813.5	780.5	779.9	779.6	767.6	768.6	768.9	931.7	934.2	934.0
24	815.0	815.3	814.8	813.7	813.7	813.1	779.2	779.3	779.9	770.0	769.7	769.3	940.7	946.0	950.2
25	815.0	815.5	815.7	812.5	812.3	812.3	780.8	780.9	782.6	768.7	768.3	768.7	952.8	953.2	954.3
26	815.5	816.8	817.7	812.0	812.0	812.1	784.2	784.8	785.7	768.9	769.4	769.5	954.8	952.0	947.3
27	818.5	819.7	820.1	812.3	812.3	813.3	786.5	787.5	788.2	770.1	770.4	770.9	935.9	927.3	918.3
28	820.7	820.7	820.8	813.4	813.5	813.5	788.2	787.8	787.5	772.1	772.9	774.8	914.8	910.2	912.5
29	820.5	820.2	820.1	813.5	814.0	814.2	787.6	787.9	788.2	776.0	778.3	780.0	915.9	922.2	928.2
30	820.1	820.4	819.8	814.5	814.6	814.9	788.5	788.6	789.0	780.6	781.8	782.6	936.9	940.2	943.3
31	820.0	820.5	820.2	815.2	815.7	816.2	789.0	789.0	789.0	782.2	782.0	781.5	944.7	948.5	952.0
32	820.1	820.1	820.5	816.4	816.5	816.8	789.1	789.4	789.7	781.0	780.4	779.8	955.2	959.8	962.1
33	820.2	820.1	820.7	816.8	817.1	817.1	790.1	790.5	791.0	779.6	779.5	779.5	965.9	969.2	968.4
34	820.9	821.2	822.5	816.9	816.8	816.4	791.7	792.8	793.0	779.1	779.1	779.1	963.2	949.6	938.2
35	823.2	823.2	823.2	816.4	816.5	816.5	793.6	793.9	794.7	779.1	779.2	779.5	931.4	934.0	943.0
36	823.3	823.3	823.3	816.7	816.5	816.2	795.2	796.4	796.8	779.3	780.2	780.6	965.3	977.9	1002.0
37	823.3	823.6	823.3	816.4	816.5	816.7	798.0	799.0	799.2	781.4	782.3	783.0	1038.9	1053.6	1061.5
38	821.9	820.9	818.9	816.7	816.7	816.8	799.6	800.0	800.3	784.3	785.1	785.3	1065.2	1063.3	1060.1
39	818.2	817.5	817.4	816.9	816.8	816.8	800.3	799.9	799.4	785.4	786.5	788.1	1055.4	1045.7	1056.3
40	817.3	816.9	816.6	816.4	815.8	815.6	799.2	799.1	798.8	788.4	788.6	788.5	1057.1	1056.0	1055.4
41	816.5	816.4	815.8	815.1	815.3	815.6	799.0	799.0	799.2	787.3	785.0	783.4	1053.6	1050.1	1048.2
42	815.4	814.7	814.4	815.7	815.7	815.7	799.4	799.5	799.7	781.1	780.0	780.0	1047.4	1047.4	1055.4
43	814.7	815.1	814.7	815.6	815.3	815.1	801.2	801.4	801.9	781.6	782.7	785.4	1058.4	1064.2	1069.2
44	813.7	813.1	812.9	814.5	814.1	813.4	802.9	803.5	804.3	786.8	788.1	789.1	1069.2	1066.5	1059.9
45	812.7	812.6	812.3	813.0	813.0	812.5	804.7	805.6	806.1	790.9	792.4	793.7	1055.7	1052.4	1053.6
46	812.5	812.5	813.0	812.5	812.4	812.3	806.5	806.6	806.9	793.9	793.0	791.7	1058.2	1059.9	1067.9
47	813.4	814.2	815.0	811.7	811.3	810.2	806.9	807.0	806.7	790.5	789.5	788.8	1057.1	1091.1	1094.1
48	815.7	816.4	817.0	809.6	809.1	808.9	806.6	805.9	805.9	788.0	787.1	786.4	1093.4	1093.8	1098.5
49	817.4	818.4	818.5	808.9	808.9	808.9	805.5	805.1	804.3	785.5	784.0	782.9	1104.1	1112.8	1115.0
50	819.7	820.2	821.2	809.0	809.0	809.4	803.8	802.5	801.8	781.0	779.2	777.1	1115.7	1114.5	1114.5
51	822.2	823.9	823.5	809.8	810.0	810.2	800.7	800.3	800.1	775.6	774.1	773.1	1117.7	1120.3	1126.9
52	821.8	820.7	820.1	810.6	810.7	811.0	799.7	799.6	799.4	772.7	770.6	769.7	1128.3	1127.0	1122.0
53	819.6	818.8	818.4	811.2	811.2	811.2	799.2	798.8	798.7	768.9	767.8	767.6	1118.1	1110.8	1101.6
54	818.4	818.4	818.8	811.2	810.0	810.6	798.1	797.9	797.4	767.0	766.9	766.6	1098.2	1092.6	1085.7
55	820.5	821.6	823.5	810.1	809.7	809.3	796.9	797.0	797.0	766.7	767.2	766.7	1082.5	1080.0	1080.5
56	823.9	824.4	824.4	808.9	808.9	808.7	797.3	797.2	796.9	766.7	766.9	767.3	1076.6	1070.0	1066.8
57	824.0	823.0	821.9	808.3	808.2	808.2	796.7	796.3	795.8	767.4	767.9	768.6	1071.5	1080.7	1086.1
58	821.1	820.1	819.1	807.9	807.8	807.5	795.7	795.7	795.4	769.1	769.4	770.5	1093.0	1094.8	1100.3
59	819.1	818.9	818.5	807.5	807.4	806.8	795.0	794.6	794.3	771.3	772.0	772.7	1103.9	1103.5	1099.2

Term-hour observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

	December 1, 1882, 22h.			December 15, 1882, 23h.			January 1, 1883, 0h.			January 15, 1883, 1h.			February 1, 1883, 2h.		
	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s
m.	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
0	781.1	780.0	779.6	731.9	733.2	735.8	985.3	984.6	985.1	853.8	853.7	852.6	802.4	803.1	802.1
1	778.9	778.0	777.7	736.9	738.5	738.7	986.4	985.4	987.8	853.0	852.8	853.0	801.2	799.5	798.8
2	777.2	775.9	777.0	739.4	739.7	740.7	988.1	987.7	990.5	853.1	853.4	853.7	797.9	797.7	797.4
3	777.0	776.9	776.6	741.1	741.7	743.4	991.4	990.9	992.8	854.6	855.2	855.4	797.7	797.8	798.1
4	776.9	777.3	777.9	743.9	744.8	746.8	992.6	992.2	992.1	855.9	856.5	856.7	798.9	798.9	798.6
5	778.6	779.2	779.3	750.3	751.7	753.4	994.2	994.6	994.4	856.9	857.6	858.8	798.8	798.8	798.8
6	778.9	778.8	778.5	753.8	756.6	758.5	994.8	995.6	995.9	859.3	860.1	859.6	798.8	798.6	798.4
7	778.6	779.2	780.2	760.9	761.9	761.9	995.6	996.0	996.2	861.6	862.1	862.8	798.8	799.1	799.0
8	780.8	780.6	779.9	762.8	763.2	763.6	997.4	998.3	999.3	863.0	863.2	863.3	799.1	799.1	799.1
9	779.5	779.6	780.2	764.3	764.4	765.8	999.7	1000.4	1001.3	863.4	863.6	863.7	799.3	799.1	799.1
10	780.6	780.6	780.3	767.5	770.2	770.3	1001.3	1000.7	1001.7	864.0	864.1	864.3	799.3	799.3	799.0
11	780.7	780.7	780.2	768.6	770.3	770.2	1001.8	1001.1	1002.4	864.5	864.5	864.5	798.8	798.1	797.5
12	779.6	779.2	778.9	771.0	772.5	773.0	1002.5	1002.1	1001.9	864.5	864.7	864.7	797.5	797.5	797.4
13	778.6	778.4	777.7	773.6	773.5	772.8	1002.5	1002.4	1002.9	864.8	865.1	865.2	797.1	797.1	797.3
14	776.8	776.8	777.0	770.9	769.7	767.8	1003.5	1002.9	1004.6	865.4	866.0	866.5	797.5	798.1	798.6
15	777.6	778.1	778.0	767.0	765.4	764.3	1005.5	1006.9	1008.4	867.0	867.0	867.0	798.9	799.1	799.1
16	778.0	778.5	779.1	763.5	763.1	761.9	1007.9	1008.5	1009.0	867.1	867.1	866.8	799.0	799.0	799.1
17	779.2	779.7	780.2	760.8	759.6	757.7	1010.7	1010.6	1011.2	866.8	866.7	866.7	799.1	799.0	799.1
18	780.3	779.9	779.7	756.6	756.4	757.6	1011.1	1011.0	1011.5	866.7	867.0	867.2	799.0	798.9	798.4
19	779.7	779.6	779.2	760.0	762.0	763.0	1011.1	1010.6	1011.1	867.2	867.5	867.8	797.8	797.7	797.3
20	778.8	778.1	777.6	763.2	763.2	763.3	1011.2	1011.2	1011.1	867.8	867.8	867.6	796.7	796.4	796.3
21	777.2	776.1	775.1	763.7	764.4	765.4	1010.3	1011.0	1011.2	867.6	867.5	867.6	796.0	796.0	795.7
22	773.7	773.7	772.9	765.7	766.6	768.4	1011.0	1010.3	1009.9	868.1	868.5	868.3	795.4	795.0	794.7
23	772.9	773.0	773.4	772.1	773.0	774.4	1009.6	1010.3	1011.0	868.2	868.7	869.1	793.8	792.7	792.4
24	774.1	774.2	774.5	775.6	776.2	776.2	1011.3	1011.7	1012.7	869.2	869.4	869.2	792.3	792.2	792.0
25	775.3	776.9	778.1	776.0	775.3	774.2	1013.4	1012.7	1013.3	869.5	870.3	871.4	791.9	791.9	791.9
26	780.8	780.7	781.2	773.0	771.8	770.8	1012.7	1012.0	1011.2	872.3	873.0	873.4	791.6	791.8	791.5
27	783.1	784.0	784.8	770.2	769.2	767.8	1010.8	1011.3	1011.5	874.5	875.0	875.6	791.1	790.9	790.7
28	784.7	784.4	784.4	767.3	765.8	764.8	1012.4	1012.3	1011.9	876.0	876.7	877.4	790.3	789.5	789.2
29	784.3	783.3	783.3	763.9	762.4	760.9	1011.6	1011.7	1013.3	878.0	878.2	878.4	788.4	788.3	787.5
30	783.7	783.1	784.0	760.5	761.3	763.3	1011.3	1012.2	1011.9	878.6	879.3	879.8	786.5	786.0	785.4
31	784.0	783.7	783.0	765.1	765.7	765.9	1011.6	1010.4	1009.5	880.5	880.8	881.1	784.1	783.8	783.4
32	782.0	781.5	780.2	765.9	764.8	763.7	1008.6	1008.4	1006.4	881.1	881.1	881.1	783.3	783.6	784.0
33	778.8	778.2	777.7	763.2	762.7	761.0	1007.3	1007.9	1008.5	881.2	881.2	881.2	784.4	784.0	783.8
34	777.3	777.0	776.9	761.5	763.0	765.5	1007.9	1008.5	1008.6	881.5	881.8	882.0	783.8	783.4	783.1
35	776.6	776.1	776.2	767.3	768.7	768.7	1009.7	1009.7	1009.2	882.2	882.9	883.5	783.0	783.0	783.1
36	777.7	778.6	779.6	767.5	766.4	765.1	1009.3	1009.5	1009.6	883.6	883.8	884.3	783.1	783.3	783.7
37	780.3	780.9	781.8	763.5	763.7	763.6	1009.6	1009.7	1011.2	884.9	885.2	885.5	784.1	784.2	784.4
38	782.9	783.6	784.0	763.5	763.5	763.2	1011.1	1011.6	1011.9	885.9	886.3	886.4	783.7	783.3	783.1
39	784.3	784.7	785.2	761.7	759.6	757.7	1013.3	1013.3	1013.3	886.6	886.7	886.7	782.6	782.6	782.7
40	785.0	784.4	784.1	757.1	753.0	752.1	1013.4	1013.4	1013.5	887.0	887.1	887.8	782.9	782.9	782.9
41	784.1	784.0	783.7	751.0	750.7	750.5	1013.5	1014.0	1015.1	888.2	888.6	888.9	783.0	783.4	783.4
42	784.3	784.4	784.6	750.7	750.7	751.8	1015.6	1017.2	1018.2	889.3	889.5	889.8	783.6	783.8	783.8
43	784.6	784.4	783.0	752.0	753.0	754.5	1019.2	1020.8	1021.2	889.8	889.8	890.5	784.0	784.0	784.1
44	781.2	781.2	781.5	755.4	755.8	752.7	1022.1	1022.3	1021.7	890.7	891.3	891.4	784.2	784.7	785.3
45	781.9	782.4	782.7	754.5	754.9	756.2	1021.3	1021.3	1020.9	891.7	892.1	892.1	785.7	786.3	786.5
46	783.0	780.8	781.1	756.1	757.3	756.9	1020.6	1020.6	1020.5	892.4	892.5	892.4	786.9	787.2	787.2
47	780.6	780.3	778.6	756.0	755.0	754.7	1020.1	1019.2	1019.8	892.8	892.8	892.4	786.9	787.4	787.2
48	777.6	777.5	777.2	755.0	755.1	755.7	1019.7	1017.8	1017.7	892.2	892.2	892.0	786.4	785.8	785.6
49	776.8	775.7	774.2	755.8	755.8	755.4	1017.5	1017.4	1018.5	891.8	891.7	891.4	784.7	784.4	784.1
50	773.7	772.5	770.7	755.5	755.3	755.1	1019.2	1020.8	1021.0	891.0	891.0	891.0	783.1	783.1	783.3
51	768.0	766.5	764.9	754.9	754.0	753.7	1023.3	1024.7	1026.4	892.2	892.2	892.4	783.0	783.3	783.3
52	763.6	763.2	763.1	754.0	754.0	754.4	1026.8	1026.5	1027.6	892.2	892.2	892.2	783.6	783.8	783.8
53	762.8	761.8	761.0	755.4	756.2	757.2	1027.9	1028.7	1029.1	892.4	892.5	892.7	784.2	784.7	784.8
54	760.4	759.4	759.6	757.5	757.8	757.8	1029.5	1029.5	1029.4	892.7	892.5	892.5	785.1	785.4	786.0
55	760.5	760.4	759.3	758.4	758.4	757.8	1028.8	1029.1	1029.2	892.4	892.2	892.1	786.0	785.8	786.3
56	758.8	757.8	757.2	757.5	756.9	756.6	1029.2	1029.7	1030.1	892.0	892.0	891.8	786.3	783.7	786.5
57	756.7	755.6	754.3	756.5	756.6	758.1	1029.9	1029.5	1029.0	892.0	891.8	892.0	786.4	786.8	786.7
58	753.4	752.8	751.8	758.7	761.0	763.6	1028.4	1028.3	1027.7	892.0	892.1	892.0	787.1	787.1	787.6
59	750.6	749.1	748.3	764.6	766.4	766.2	1027.4	1027.2	1026.7	891.8	891.7	891.6	788.3	788.7	789.6

Term-hour observations at Fort Conger from July 1, 1882, to August 1, 1883, inclusive—Continued.

$\phi = 81° 44' 00''$ $\lambda = -64° 43' 30''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

	February 15, 1883, 3h.			March 1, 1883, 4h.			March 15, 1883, 5h.			April 1, 1883, 6h.		
	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s
m.	′	′	′	′	′	′	′	′	′	′	′	′
0	804.4	803.7	802.3	856.4	857.1	858.2	806.5	807.3	808.2	808.1	809.7	810.6
1	802.1	801.2	801.3	859.1	859.5	860.1	809.1	810.0	810.9	810.7	811.0	811.4
2	801.7	801.8	802.3	862.5	863.1	863.0	812.0	814.2	815.4	811.7	811.8	813.5
3	803.2	803.7	804.4	863.1	862.9	861.4	815.4	815.7	815.8	812.7	813.1	813.1
4	804.6	805.2	806.4	860.2	857.9	858.7	817.8	820.9	821.7	813.2	812.9	813.5
5	807.1	808.8	808.7	858.8	858.8	858.2	823.3	824.4	826.0	813.6	812.9	815.5
6	811.6	812.7	814.2	858.1	858.2	857.6	826.3	830.3	836.1	816.7	819.4	819.9
7	814.8	815.3	818.6	856.1	855.8	854.8	838.5	839.9	842.1	820.9	821.7	821.6
8	820.3	821.6	822.8	853.6	853.2	853.0	844.1	848.1	849.9	821.3	820.0	819.6
9	823.0	823.1	823.4	851.5	847.2	844.9	851.4	883.1	882.9	818.2	817.2	817.3
10	823.7	823.8	824.0	843.3	842.7	842.1	883.3	882.7	881.8	818.3	818.0	818.2
11	824.5	824.0	823.8	841.0	839.1	837.2	881.3	878.8	878.6	818.2	818.9	819.1
12	826.5	823.6	824.2	835.9	834.0	833.6	877.6	877.0	875.2	818.7	818.6	819.3
13	826.3	827.6	827.8	832.6	831.9	831.5	873.6	872.3	870.0	819.3	819.5	819.4
14	826.3	825.3	824.1	831.1	830.7	830.7	869.1	867.6	865.8	819.3	819.0	817.1
15	823.7	822.8	822.4	830.2	830.0	830.1	862.9	861.5	860.6	816.3	815.6	812.3
16	822.3	822.9	821.7	829.7	829.6	829.0	860.2	860.9	861.9	811.3	810.0	809.2
17	821.9	821.0	820.0	828.5	827.1	826.4	861.8	862.8	862.6	808.3	807.2	806.5
18	819.6	818.7	820.7	825.9	825.5	825.7	864.5	866.5	870.3	806.1	805.8	805.0
19	821.3	822.4	821.0	824.3	823.7	822.3	874.5	876.5	878.2	805.0	803.5	803.5
20	821.2	821.6	822.0	823.1	822.6	821.4	879.9	879.9	880.6	801.9	801.3	800.6
21	821.6	822.0	822.3	821.1	821.1	820.2	881.3	883.3	883.6	799.9	800.1	799.7
22	822.0	821.6	822.2	819.9	819.1	818.9	883.6	883.3	882.4	799.9	800.1	800.3
23	820.0	819.3	819.0	819.1	821.2	822.2	880.6	879.2	877.8	800.2	801.0	800.6
24	818.6	818.2	817.9	823.3	823.3	822.9	877.4	876.9	876.9	801.3	801.5	801.4
25	817.6	816.6	818.2	823.1	823.1	822.9	876.2	874.5	873.8	800.8	801.3	801.4
26	818.2	820.8	821.0	822.9	821.9	821.8	873.9	874.0	874.2	801.8	801.4	800.6
27	820.0	819.2	818.9	821.8	822.2	823.7	873.8	872.7	872.4	800.6	800.4	800.4
28	818.3	819.2	820.3	825.5	826.0	826.2	871.8	873.6	875.9	799.7	799.5	799.8
29	821.4	821.6	821.7	826.3	825.9	826.0	877.6	877.8	877.0	799.4	798.8	799.5
30	821.9	821.9	822.7	826.4	828.2	828.6	875.9	875.1	875.1	798.6	798.3	798.3
31	823.0	823.7	823.7	829.7	830.5	829.6	875.1	875.4	875.2	799.1	798.8	798.8
32	823.1	822.1	821.3	828.5	828.4	829.1	874.3	874.3	874.0	798.8	799.0	798.8
33	820.7	820.0	819.6	829.6	830.0	830.1	872.1	871.1	870.8	798.4	798.0	798.3
34	819.3	820.0	822.8	829.7	829.8	830.7	871.0	871.2	871.1	798.3	798.8	798.8
35	822.7	824.2	824.9	830.8	831.5	832.8	871.2	871.7	871.9	798.6	798.8	798.6
36	824.9	824.4	824.0	833.5	834.9	835.6	872.3	871.2	871.0	798.0	798.0	798.0
37	823.6	823.6	823.6	836.4	836.2	836.8	870.0	870.4	870.0	797.7	798.7	799.7
38	823.2	822.8	822.7	837.5	838.9	840.3	869.5	868.0	864.2	800.2	801.1	802.4
39	822.8	823.0	824.4	840.4	841.1	840.4	861.9	860.6	856.9	803.4	804.5	804.5
40	825.2	826.5	827.6	837.6	836.4	834.9	855.7	854.7	853.6	806.3	808.5	809.6
41	827.6	827.2	826.7	832.4	830.1	827.8	853.3	853.2	852.8	810.7	810.0	811.8
42	825.3	824.0	821.3	826.3	824.8	823.6	852.8	853.1	853.2	813.1	815.8	817.2
43	819.7	817.5	815.4	822.6	823.1	824.0	853.0	851.5	850.6	819.3	819.9	821.3
44	814.1	811.4	810.3	824.6	824.4	824.7	848.0	847.5	845.3	822.2	823.7	825.1
45	809.3	809.9	810.5	825.8	825.1	825.3	844.1	843.1	843.0	826.0	826.8	827.2
46	810.8	810.1	809.5	825.5	825.0	824.0	844.8	844.1	844.5	828.2	828.9	829.5
47	808.0	806.6	805.2	823.1	822.6	821.8	844.8	844.5	844.9	830.5	831.2	832.0
48	803.6	802.5	801.7	821.8	821.5	822.0	845.5	846.4	849.2	832.0	832.5	832.9
49	800.9	800.6	800.1	822.0	822.2	823.2	850.2	849.8	850.4	832.3	832.2	831.8
50	799.8	800.0	799.4	823.5	822.7	822.6	851.6	852.4	853.2	831.4	830.4	830.8
51	799.0	798.4	797.3	822.6	822.3	822.3	854.4	857.0	858.6	330.8	831.6	831.8
52	796.4	795.8	795.4	822.3	822.3	821.9	860.5	862.6	866.1	832.3	832.7	832.7
53	795.4	795.0	794.7	823.5	823.6	823.7	866.3	866.7	868.1	833.3	833.2	833.3
54	794.6	792.7	791.5	823.2	821.2	820.2	868.4	868.4	868.4	833.9	834.3	835.7
55	791.2	790.9	790.0	818.1	817.2	815.9	868.4	868.0	867.6	836.0	837.1	838.2
56	789.7	789.3	788.5	814.1	814.0	814.9	865.6	865.8	865.6	838.2	837.7	837.4
57	788.2	787.8	787.1	815.2	816.7	817.7	865.4	865.8	865.2	836.3	835.8	835.3
58	786.7	785.7	785.4	819.5	819.5	820.2	865.2	864.6	865.3	833.9	833.5	833.2
59	785.6	785.2	784.1	820.7	820.9	822.0	864.7	863.5	862.8	832.9	832.5	833.2

Term-hour observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81° \, 44' \, 00''$ $\lambda = -64° \, 43' \, 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

	April 15, 1883, 7h.			May 1, 1883, 8h.			May 15, 1883, 9h.			June 1, 1883, 10h.		
	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20	40s
m.	′	′	′	′	′	′	′	′	′	′	′	′
0	918.4	918.6	918.7	872.7	872.4	873.6	824.4	825.9	826.4	823.4	823.6	823.2
1	918.8	919.0	919.1	874.4	874.9	876.3	827.2	827.5	828.3	822.0	821.3	821.2
2	919.7	921.0	921.7	877.5	878.8	879.4	827.4	826.4	824.7	820.6	821.0	822.3
3	923.0	923.9	926.1	880.4	882.5	882.7	824.4	825.0	825.3	823.6	824.4	826.0
4	927.3	927.9	928.9	882.5	881.8	882.1	825.3	825.0	824.4	826.4	826.1	825.8
5	929.4	930.0	930.0	882.6	883.0	882.7	824.4	824.3	824.2	824.7	823.4	823.2
6	930.1	930.2	930.5	882.4	882.5	882.7	824.8	824.8	824.8	823.0	823.0	822.1
7	930.5	930.2	930.1	882.6	882.4	882.4	824.8	824.7	825.0	822.0	822.1	822.6
8	929.7	929.4	929.0	882.6	882.6	882.6	825.7	825.8	825.9	822.4	822.1	820.6
9	928.5	928.5	928.3	883.0	884.1	885.5	826.4	826.1	826.4	819.4	818.6	818.5
10	928.1	927.9	927.9	885.8	886.5	887.3	826.2	826.8	827.1	818.1	818.1	818.2
11	927.7	927.7	927.7	888.6	800.6	890.4	827.6	828.1	828.5	818.1	817.8	817.8
12	928.0	927.9	928.0	889.7	888.2	888.0	828.6	829.7	829.9	817.6	816.3	815.6
13	928.5	929.1	929.6	887.2	886.2	886.2	830.2	830.6	831.0	815.2	814.2	812.8
14	929.8	930.0	930.4	886.5	886.1	885.7	832.5	832.7	834.4	812.4	811.9	811.4
15	930.5	930.5	930.7	885.3	885.5	888.0	835.3	835.6	836.5	809.9	809.3	807.6
16	930.8	930.7	930.4	888.1	888.4	888.6	837.5	837.6	837.9	806.6	804.4	803.3
17	930.4	930.2	930.1	890.8	892.7	894.3	838.1	839.0	839.8	802.5	801.5	799.9
18	930.1	930.2	930.7	895.1	896.1	897.4	840.3	840.5	840.5	799.7	799.6	798.5
19	931.1	931.2	931.7	896.1	895.7	895.1	842.9	843.5	843.6	797.7	796.7	795.7
20	932.0	932.3	932.5	895.7	895.8	895.9	843.9	843.9	843.8	794.4	793.3	792.2
21	932.5	932.7	932.7	897.3	897.7	898.8	844.6	845.0	844.9	791.9	791.2	791.6
22	932.8	932.9	932.9	899.3	900.9	900.8	843.5	843.0	842.9	792.3	792.3	791.5
23	932.9	932.9	932.9	900.1	900.0	900.5	843.0	842.2	842.3	790.5	790.2	789.3
24	932.8	932.5	932.1	900.4	900.5	902.6	843.9	845.1	847.2	788.2	788.1	788.1
25	931.6	931.3	930.9	903.3	904.5	904.9	849.1	853.9	855.6	787.5	786.1	784.7
26	930.9	928.7	927.6	906.3	908.9	910.8	857.1	857.1	857.0	783.3	781.8	781.4
27	927.2	926.1	925.7	912.6	914.5	918.0	856.8	855.9	854.6	782.0	781.8	780.9
28	925.2	924.3	923.5	923.1	926.9	928.5	854.5	854.4	853.9	779.6	779.2	778.2
29	923.2	923.2	923.5	931.9	933.5	935.6	854.0	852.8	852.1	776.3	775.4	775.6
30	923.4	923.4	923.6	936.0	936.2	936.9	851.8	851.6	851.6	775.9	776.2	776.2
31	923.8	924.2	924.5	936.8	936.8	937.1	852.2	853.8	854.9	774.4	773.2	772.1
32	924.7	924.7	925.0	937.3	936.7	937.3	855.0	856.3	857.2	771.8	771.6	771.6
33	925.0	925.0	925.2	937.8	938.5	938.8	858.6	858.7	858.0	772.1	773.6	774.0
34	925.2	925.0	925.2	939.0	940.2	942.2	858.7	859.0	857.9	774.4	776.2	778.3
35	924.9	924.5	924.2	943.9	945.3	945.7	857.6	856.6	856.3	779.4	780.7	781.1
36	923.8	923.4	923.1	945.7	946.3	945.1	855.3	855.2	855.7	782.1	784.3	786.5
37	922.4	921.9	921.5	944.9	944.7	945.0	856.0	857.7	858.6	788.5	790.2	791.1
38	921.0	920.6	920.3	947.2	949.4	950.8	858.7	858.7	859.5	793.9	795.3	796.4
39	919.8	919.5	919.5	950.4	949.7	948.2	859.4	858.6	858.3	797.3	798.4	799.7
40	919.5	919.4	919.2	946.8	946.6	946.8	857.7	857.3	857.2	801.5	809.1	805.5
41	919.4	919.4	919.2	947.0	946.7	944.4	857.6	857.2	856.4	808.6	811.0	814.6
42	919.5	920.3	920.7	943.3	941.7	940.1	854.2	852.8	850.1	816.6	818.6	818.8
43	921.5	921.8	922.1	937.7	936.0	934.2	848.4	845.4	844.0	810.6	820.6	821.6
44	921.9	921.8	922.1	932.7	931.1	930.3	843.5	845.0	850.0	822.1	824.3	826.0
45	922.2	923.1	923.2	930.3	929.9	929.1	852.9	855.7	859.3	828.2	830.1	830.6
46	923.6	924.1	924.3	927.9	927.5	926.5	861.4	865.2	867.5	834.2	836.7	838.6
47	924.7	925.0	925.3	925.9	923.8	922.5	870.4	873.5	876.6	838.8	838.5	838.5
48	925.4	924.6	925.2	922.4	922.7	922.3	879.1	881.0	881.1	839.6	841.2	844.6
49	924.6	924.3	924.3	921.3	920.8	919.3	879.6	878.1	874.7	845.6	847.3	847.9
50	923.6	923.0	922.8	917.7	916.6	914.5	872.0	870.7	870.5	848.6	849.3	850.7
51	922.5	921.9	922.1	913.4	911.4	909.4	870.9	871.7	871.6	851.4	853.1	853.5
52	922.4	923.0	923.5	906.3	904.4	901.8	871.8	872.0	871.3	853.9	856.1	858.4
53	923.9	924.9	925.8	899.4	896.7	894.8	870.9	870.3	871.4	852.7	862.3	864.0
54	926.5	926.8	927.0	892.9	892.4	891.9	871.4	871.0	871.0	864.5	864.9	867.1
55	927.2	926.9	926.8	891.5	889.5	887.2	870.5	869.6	869.7	869.1	869.9	869.8
56	926.1	925.0	924.5	886.8	886.8	887.2	869.3	868.8	868.6	868.8	867.2	866.0
57	924.3	924.3	924.3	887.9	887.6	887.0	868.5	867.8	867.5	865.2	865.1	865.1
58	924.3	924.6	925.2	886.4	883.6	884.4	867.5	867.3	867.3	864.9	864.8	864.7
59	926.2	926.8	927.2	884.2	884.5	884.1	866.5	866.6	866.1	864.7	863.7	862.0

Term-hour observations at Fort Conger from July 1, 1882, *to August* 1, 1883, *inclusive*—Continued.

$\phi = 81^\circ\ 44'\ 00''$ $\lambda = -64^\circ\ 43'\ 50''$

Magnetic declination = 246° E. + tabular quantity. Göttingen time.

	June 15, 1883, 11h.			July 1, 1883, 12h (noon).			July 15, 1883, 13h.			August 1, 1883, 14h.		
	0s	20s	40s	0s	20s	40s	0s	20s	40s	0s	20s	40s
m.	′	′	′	′	′	′	′	′	′	′	′	′
0	778.2	777.8	778.2	846.5	848.5	849.7	783.2	782.5	780.3	836.8	836.9	836.5
1	778.4	776.7	776.3	852.5	853.6	854.4	777.7	776.1	774.2	836.6	836.5	836.1
2	776.8	776.7	776.0	854.0	853.5	852.5	772.8	771.0	770.6	837.3	838.0	837.7
3	776.4	775.2	774.5	852.2	851.8	852.0	770.4	769.8	767.5	836.8	835.8	835.5
4	775.7	776.3	777.9	851.6	848.2	845.6	766.3	765.0	764.4	835.1	835.1	835.1
5	778.2	778.4	778.3	842.9	840.6	840.0	764.4	765.6	766.1	835.3	834.4	834.0
6	776.7	776.8	776.4	837.1	836.7	833.7	767.6	769.0	771.5	830.9	827.7	824.0
7	776.8	777.6	780.8	833.6	830.7	830.1	773.4	776.6	777.9	822.8	821.1	819.0
8	782.3	783.0	782.2	829.2	827.9	827.0	780.7	781.7	784.0	812.1	(*)	(*)
9	780.6	779.3	777.6	825.4	824.5	824.1	786.5	787.8	789.6	(*)	(*)	(*)
10	776.0	775.2	775.6	824.0	823.4	823.5	790.9	792.3	794.0	(*)	(*)	(*)
11	775.2	774.5	776.2	824.6	824.3	826.4	795.5	797.3	797.8	(*)	(*)	(*)
12	777.5	777.3	777.2	828.1	830.3	830.7	797.8	797.8	797.6	(*)	(*)	(*)
13	776.7	775.3	774.1	829.4	828.5	828.2	797.1	795.4	794.4	(*)	(*)	(*)
14	774.6	775.3	776.7	829.3	829.3	829.7	792.6	792.0	790.7	(*)	(*)	(*)
15	776.6	776.7	776.7	829.9	830.6	830.7	789.9	788.7	788.2	(*)	(*)	(*)
16	774.6	774.1	771.9	831.3	831.8	833.1	787.1	786.2	785.5	(*)	(*)	(*)
17	770.4	767.3	764.7	832.7	832.9	832.1	784.3	783.2	782.3	(*)	(*)	(*)
18	762.7	760.8	760.9	832.7	832.1	831.0	781.2	779.9	779.5	(*)	(*)	744.6
19	761.6	761.6	761.9	830.6	829.2	827.8	778.0	777.4	776.9	743.0	740.4	732.7
20	762.2	762.5	762.0	826.9	825.0	824.3	776.6	776.3	776.3	736.7	732.7	732.7
21	759.1	755.7	754.7	823.3	821.1	817.3	776.6	776.6	776.9	731.3	729.0	725.0
22	756.0	756.1	759.8	816.8	816.4	817.9	777.0	777.2	777.2	722.7	722.8	722.7
23	762.0	762.2	761.9	819.4	821.4	825.5	777.4	777.7	777.9	724.9	725.0	724.2
24	760.3	757.7	754.0	827.4	830.9	830.5	778.5	778.6	778.9	724.2	723.8	723.9
25	751.3	748.9	748.6	833.6	834.9	835.6	778.9	779.6	779.7	724.2	724.1	723.1
26	748.8	748.6	747.8	840.2	844.3	848.0	779.9	780.1	780.0	723.5	725.5	725.2
27	746.8	746.7	745.8	851.9	855.1	857.3	779.9	780.0	780.0	724.1	725.0	725.6
28	742.9	740.3	737.3	850.1	861.7	862.6	779.9	779.7	779.2	725.9	726.3	725.5
29	734.7	730.3	727.7	863.3	861.7	860.6	779.2	779.6	780.0	723.9	724.6	725.2
30	724.4	721.9	718.8	858.7	858.2	857.3	781.0	781.2	780.4	725.0	721.8	722.2
31	716.1	713.9	711.6	855.7	852.4	847.8	779.7	778.8	778.6	722.2	720.8	717.8
32	709.9	708.0	706.5	844.2	841.5	838.9	778.1	777.3	777.2	716.0	712.6	710.6
33	706.7	705.0	704.3	835.9	833.8	834.4	776.1	775.6	775.9	710.4	711.3	711.9
34	703.0	703.2	703.3	838.9	838.3	840.4	776.5	777.6	778.3	711.3	711.2	711.9
35	703.9	703.9	703.9	839.2	840.9	841.3	777.9	776.9	775.3	712.9	713.4	716.6
36	703.9	704.6	704.4	841.9	841.3	838.9	773.8	773.4	773.5	720.3	727.7	733.6
37	706.5	709.9	712.4	837.5	834.9	834.9	773.6	774.2	775.0	737.9	742.0	745.7
38	715.3	718.1	718.9	837.1	838.3	839.3	775.2	774.7	774.7	747.5	748.1	748.6
39	720.5	725.9	729.4	841.9	843.8	843.9	774.3	773.9	773.8	748.9	750.2	751.9
40	730.6	732.4	733.5	844.3	844.9	847.5	773.2	772.8	773.1	752.4	752.8	753.2
41	736.6	738.5	739.9	850.0	850.5	850.8	773.4	773.6	774.1	752.7	752.6	752.0
42	739.5	739.6	738.4	850.8	849.7	849.1	774.5	775.3	775.7	753.8	756.3	757.0
43	737.7	737.3	737.0	849.2	848.4	848.2	775.8	775.9	775.8	758.3	759.8	761.1
44	735.9	735.6	735.8	848.2	846.7	846.3	775.8	776.1	776.1	762.5	765.2	766.6
45	734.5	733.0	733.5	845.7	845.4	844.9	776.5	777.6	779.0	770.4	771.8	773.1
46	733.6	734.1	735.0	842.3	843.4	842.6	779.9	780.0	781.6	775.0	775.7	775.0
47	733.2	732.6	731.4	844.2	845.6	845.6	782.3	782.4	782.5	774.1	773.2	773.5
48	731.9	730.6	730.1	845.8	848.0	848.8	782.7	782.8	782.9	774.1	774.8	775.1
49	728.7	728.7	727.6	850.8	852.8	855.2	783.4	782.9	782.5	775.9	776.2	776.1
50	726.3	726.2	726.0	857.0	858.2	858.6	781.7	781.6	781.4	776.1	776.6	778.6
51	724.9	725.2	726.6	859.4	859.1	860.0	781.3	781.0	780.4	779.3	781.0	781.8
52	728.6	730.8	731.8	861.5	861.8	862.3	780.0	778.8	778.0	781.8	782.0	782.1
53	731.9	731.4	729.8	863.2	862.6	861.2	778.8	777.2	777.4	782.4	782.1	782.9
54	730.6	730.8	731.8	859.8	860.2	860.6	777.3	777.9	779.0	783.0	783.0	782.1
55	733.1	734.2	735.6	859.8	859.1	858.9	779.3	780.8	781.6	781.3	782.0	782.4
56	736.6	736.3	736.2	856.8	856.3	856.6	782.8	783.2	783.4	782.5	781.3	781.8
57	736.3	737.0	738.8	856.4	857.1	858.0	783.4	783.2	784.4	784.1	785.6	787.5
58	740.7	741.2	742.4	857.1	857.4	857.1	785.1	785.2	785.4	787.1	785.6	784.1
59	744.1	744.7	745.5	857.1	856.8	856.2	785.5	785.4	785.1	781.7	779.8	779.7

* Reading of mark missed.

Special-term observations of the magnetic declination at Fort Conger.

1882.	1883.			
Nov. 17	Jan. 25	Feb. 27	May 16	June 27
Nov. 18	Jan. 26	Feb. 28	May 20	June 28
Nov. 19	Feb. 2	Mar. 2	June 2	June 30
Nov. 20	Feb. 3	Mar. 6	June 6	July 7
Nov. 21	Feb. 6	Mar. 13	June 17	July 8
Dec. 5	Feb. 17	Apr. 3	June 18	July 9
Dec. 7	Feb. 23	Apr. 4	June 19	July 10
Dec. 16	Feb. 24	Apr. 13	June 22	July 14
Dec. 17	Feb. 25	Apr. 24	June 23	July 18
Dec. 19	Feb. 26	Apr. 25	June 26	July 19
				July 30

Special observations during auroral displays or during great magnetic disturbances.

Göttingen mean time. Magnetic declination 246° E. + tabular quantity.

NOVEMBER 17, 1882.

Hour.	0^m	5^m	10^m	15^m	20^m	25^m	30^m	35^m	40^m	45^m	50^m	55^m
	′	′	′	′	′	′	′	′	′	′	′	′
11	749.3	-------	-------	-------	*1344.3	1192.2	536.7	1133.2	741.1	870.8	1073.4	1287.4
Noon.	1236.4	1200.6	1177.7	1181.0	1186.0	884.6	873.6	1101.4	750.6	948.1	914.7	1036.6
13	782.8	930.1	952.9	937.8	679.5	872.7	1009.4	745.3	893.6	809.2	894.2	954.0
14	999.4	735.9	508.1	707.6	807.9	1115.2	1137.7	1131.1	1128.7	1073.6	1009.0	805.5
15	731.3	862.0	912.7	924.3	1104.3	1129.6	-------	982.3	751.9	565.8	614.6	383.3
16	204.6	173.4	188.6	290.2	(†)	‡818.0	475.2	(†)	378.2	269.3	188.5	393.8
17	934.4	478.5	(†)	(†)	(†)	(†)	(†)	598.6	616.2	541.7	359.5	276.4
18	612.8	759.7	798.6	947.2	859.7	763.6	693.8	620.3	622.0	532.6	451.9	741.9
19	613.6	487.5	622.9	721.5	764.9	772.5	762.1	791.7	756.0	683.7	689.7	654.2
20	691.0	694.1	752.3	660.3	659.6	736.9	843.5	827.0	643.7	660.5	753.8	716.5
21	796.7	634.9	618.4	573.3	548.0	646.7	824.2	845.4	912.6	948.5	971.7	921.2
22	964.2	936.4	913.1	838.8	889.4	879.5	736.6	819.1	875.5	873.4	808.4	810.2
23	872.1	823.3	802.6	771.8	654.3	632.5	685.0	728.6	741.5	838.9	807.4	894.2

* Approximate. † Lost through heavy disturbances. ‡ One minute late.

NOVEMBER 18, 1882.

Hour.	0^m	5^m	10^m	15^m	20^m	25^m	30^m	35^m	40^m	45^m	50^m	55^m
	′	′	′	′	′	′	′	′	′	′	′	′
0	880.5	860.0	756.2	880.3	877.9	866.1	925.0	938.3	982.2	978.3	1031.4	1101.3
1	1098.0	1070.8	901.4	998.9	963.1	952.3	915.8	924.8	918.8	889.6	557.3	685.4
2	790.7	585.4	836.1	842.3	561.4	744.5	693.3	683.2	837.6	991.7	776.5	861.4
3	1093.8	1230.6	1169.6	1164.0	1168.1	1220.3	1175.2	1117.5	1198.0	1188.6	1097.8	1152.1
4	1186.5	1163.4	1225.1	1045.3	1009.9	1111.9	1102.4	1094.9	1127.9	1093.5	1089.6	1070.8
5	1130.8	1020.2	1043.0	1068.6	1098.0	1045.7	1126.3	1024.4	1087.7	1098.1	1075.8	996.2
6	984.6	935.3	977.9	928.8	995.8	989.1	978.1	979.1	1004.7	973.7	988.4	962.6
7	968.3	988.7	941.1	907.8	923.6	926.8	890.2	902.2	906.0	924.7	883.1	884.2
8	938.8	949.0	958.1	978.6	961.5	985.7	967.1	970.0	978.4	999.8	980.6	1009.9
9	990.3	1011.9	1006.3	957.5	933.4	968.7	975.1	951.3	940.3	887.7	869.7	853.2
10	914.9	936.8	951.4	881.6	910.0	944.2	957.6	968.2	842.5	730.9	681.3	-------
11	861.6	967.6	1004.4	984.1	992.5	844.4	942.3	859.2	991.2	964.8	872.8	540.7
Noon.	754.4	826.3	801.3	771.3	1007.7	970.1	895.0	879.1	729.3	912.1	882.7	981.6
13	804.1	898.6	902.9	918.0	907.4	897.0	918.0	897.4	870.1	844.9	825.6	813.1
14	801.0	822.2	804.9	806.3	812.7	823.2	801.1	822.0	800.3	824.9	782.9	648.3
15	728.2	754.9	738.0	749.5	749.9	795.2	795.0	749.4	739.8	653.3	632.7	658.8
16	729.2	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
17	722.0	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
18	458.0	-------	-------	709.8	-------	-------	729.7	702.6	713.8	-------	-------	-------
19	565.8	429.8	*324.1	644.7	646.3	453.5	620.9	†877.1	790.7	851.9	788.0	786.5
20	565.4	615.1	434.6	592.0	629.4	724.7	712.9	773.7	788.8	771.2	769.8	818.6
21	848.3	706.8	753.9	780.5	708.7	693.4	738.8	713.2	663.4	704.5	708.8	750.6
22	795.5	824.3	717.6	534.7	22.9	287.0	645.1	685.9	717.8	668.8	609.2	683.2
23	666.0	696.9	812.0	752.5	646.7	672.1	757.5	754.4	806.4	788.4	744.7	783.8

* At $7^h\ 12^m$. † At $19^h\ 38^m$.

Special observations during auroral displays or during great magnetic disturbances—Continued.

Göttingen mean time. Magnetic declination 246° E. + tabular quantity.

NOVEMBER 19, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	800.0	746.3	799.2	832.9	811.7	854.1	798.7	812.0	821.7	836.6	872.7	876.1
1	866.8	824.3	825.6	764.6	795.4	653.7	731.7	799.7	839.6	857.1	834.9	818.9
2	874.5	872.2	854.4	868.0	904.1	862.0	860.2	882.7	898.9	868.5	823.0	865.3

Other special readings.

h. m.	′	h. m.	′	h. m.	′	h. m.	′
23 12	799.0	23 19	721.2	23 24	771.1	23 29	757.8
23 15	701.9	23 20	718.3	23 25	759.2	23 30	788.1
23 16	741.7	23 21	720.3	23 26	747.5	23 31	828.3
23 17	694.9	23 22	748.9	23 27	759.0	23 32	846.6
23 18	706.9	23 23	769.1	23 28	754.7		

NOVEMBER 20, 1882.

Hour.	0m	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m
	′	′	′	′	′	′	′	′	′	′	′	′
0	784.8	691.0	705.0	735.4	723.2	720.4	792.0	635.3	637.4	696.9	705.1	691.3
1	739.5	835.6	898.0	896.6	782.1	641.4	661.3	603.4	580.5	586.9	666.6	651.5
2	459.8	608.0	622.5	583.1	526.5	656.5	652.2	722.6	402.1	245.8	451.1	903.8
3	777.0	1071.5	1204.3	1222.1	1144.5	1129.7	1078.5	1057.1	1110.4	1111.4	1070.7	1110.3
4	1043.8	1010.0	1037.7	1006.8	1048.8	1013.9	981.6	956.2	946.5	970.9	954.1	950.6
5	1009.9	1005.5	1042.8	1088.2	1137.9	1152.3	1040.6	1144.2	1216.1	1231.0	1187.5	1238.1
6	1241.4	1218.9	1437.6	1445.8	1442.9	1412.6	1154.7	1092.7	1109.4	1132.7	1113.9	1109.1
7	1114.2	-----	-----	-----	854.4	866.4	885.0	881.2	925.0	923.5	912.7	909.8
8	920.8	901.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Noon.	166.6	-----	-----	−22.6	−56.9	-----	-----	-----	-----	214.3	319.5	441.7
13	807.1	602.3	614.2	701.3	952.0	945.0	883.2	845.7	825.0	806.7	737.8	581.4
14	646.8	908.9	933.8	503.0	210.3	255.2	529.0	581.6	423.5	723.0	711.0	786.9
15	669.2	675.9	812.7	972.2	975.6	945.8	645.9	499.3	515.8	479.5	434.7	303.3
16	379.0	430.0	432.8	698.1	666.0	654.8	761.2	869.9	910.8	946.3	-----	937.2
17	702.1	689.0	810.4	569.0	470.3	547.2	609.3	617.5	497.1	395.1	268.0	310.8
18	385.5	451.1	569.1	627.8	650.4	682.8	672.8	663.7	616.2	586.6	554.0	545.3
19	601.6	620.9	606.0	605.5	619.5	669.0	665.4	626.6	661.9	728.3	630.5	617.8
20	648.1	660.2	658.2	-----	-----	-----	-----	-----	-----	-----	-----	-----
21	633.1	653.8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
22	802.9	806.3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Special observations during auroral displays or during great magnetic disturbances—Continued.

Göttingen mean time. Magnetic declination 246° E. + tabular quantity.

1882.	h. m.	′	1883.	h. m.	′	1883.	h. m.	′	1883.	h. m.	′
Nov. 21	17 35	526.4	Jan. 25	21 58	727.4	Feb. 2	3 2	899.2	Feb. 2	6 9	866.0
	40	526.6		59	729.0		5	926.1		10	870.9
	18 5	578.5		22 0	729.8		6	928.9		12 58	781.1
	10	651.0		1	731.9		7	926.2		59	776.0
Dec. 5	4 5	798.6		2	733.5		8	926.5		13 0	769.1
	10	797.5		3	731.1		9	925.0		1	763.6
Dec. 7	3 5	802.4		4	732.6		10	924.1		2	757.7
	10	800.5		5	734.2		11	920.3		5	810.1
Dec. 16	20 0	719.4		6	724.9		12	921.0		6	804.6
	5	675.1		7	713.9		13	924.5		7	793.5
	10	684.8		8	699.6		14	922.1		8	784.2
	15	660.3		9	688.4		15	917.3		9	762.4
	23 40	794.3		10	683.8		16	912.5		10	749.9
	45	805.2		21	687.3		17	907.0		11	730.4
	50	798.7		22	689.2		18	906.4		12	806.2
	55	789.1		23	695.9		19	904.6		13	807.4
	24 0	782.5		24	702.1		20	898.8		14	826.7
	5	773.3		25	706.2		21	894.5		15 8	697.6
Dec. 17	1 0	805.5		26	711.0		22	899.9		9	702.7
	5	827.5		27	714.2		23	901.9		10	712.5
	7	809.8		28	717.4		24	898.8		11	723.2
	10	828.9		29	716.7		25	890.4		12	729.7
	7 40	774.7		30	713.7		26	883.4		58	818.8
	45	775.9		31	715.1		27	874.2		59	817.1
	50	788.3		32	716.8		28	871.7		16 0	815.8
	8 0	794.6		33	720.5		29	870.3		1	810.9
Dec. 19	19 20	770.7		34	727.4		30	871.4		2	810.0
	25	781.8		35	733.2		31	874.5		3	809.8
	30	721.5		36	738.3		32	873.6		4	808.4
	35	783.7		37	745.8		33	876.8		5	802.9
	40	799.3		38	765.9		34	874.2		6	796.6
	45	771.4		39	764.6		58	841.9		7	789.2
	50	780.0		40	788.5		59	840.7		8	786.3
	55	786.4		41	763.2		4 0	839.4		58	741.2
	20 0	788.4		42	763.8		1	836.8		59	746.3
	5	788.4		43	763.0		2	836.7		17 0	747.2
	10	785.1		44	764.9		5	839.6		1	746.3
	15	782.3		45	773.1		6	838.3		2	743.4
	20	790.7		46	776.2		7	832.5		3	740.4
	25	793.4		47	775.4		8	833.0		4	742.9
	30	789.5		48	774.5		9	838.8		5	745.3
	35	788.5		49	777.0		10	836.9		6	743.7
	40	786.9		50	778.2		11	833.7		7	743.3
	45	783.8		51	781.1		12	824.6		58	602.1
	50	784.1		52	777.0		13	828.5		59	605.2
	55	780.0		53	776.6		14	798.5		18 0	606.8
	21 0	773.1		54	775.9		15	789.8		1	606.0
	5	776.9		55	777.3		16	783.3		2	609.8
	10	781.0		56	782.3		17	777.5		3	613.2
	15	784.8		57	785.1		18	765.5		4	616.2
	20	789.5		58	790.7		19	767.1		5	617.1
	25	777.8		59	795.4		20	775.4		6	620.9
	30	781.0		23 0	792.6		21	783.7		7	628.0
	35	773.4		1	795.8		22	789.0		19 58	750.7
	40	778.5		2	796.4		23	786.0		59	752.7
	45	776.7	Jan. 26	2 10	845.0		24	785.9		20 0	755.7
	50	782.4		6 10	938.2		25	779.1		1	764.0
	55	782.4		11	937.6		26	776.4		2	769.8
1883.	22 0	777.5		12	934.4		27	778.0		3	767.6
Jan. 25	19 58	670.5		13	928.8		28	780.0		4	765.2
	59	676.1		14	925.9		5 58	853.4		5	770.2
	20 0	683.9	Feb. 2	0 0	803.1		59	861.3		6	773.8
	1	686.7		5	802.3		6 0	864.5		7	776.8
	2	694.4		10	800.8		1	864.0	Feb. 3	0 58	899.8
	3	698.0		15	784.7		2	857.8		59	897.0
	4	698.9		2 58	878.9		5	854.7		1 0	887.2
	5	703.4		59	881.3		6	860.0		1	880.6
	6	708.2		3 0	888.4		7	861.6		2	873.7
	7	712.6		1	887.8		8	864.4		3	871.0

Special observations during auroral displays or during great magnetic disturbances—Continued.

Göttingen mean time. Magnetic declination 246° E. + tabular quantity.

1883.	h.	m.	′	1883.	h.	m.	′	1883.	h.	m.	′	1883.	h.	m.	′
Feb. 3	1	4	869.7	Feb. 17	17	14	601.5	Feb. 25	3	2	1091.0	Mar. 6	20	59	685.7
		5	867.7			15	599.4			5	1074.6		21	0	693.2
		6	869.0			16	598.5			6	1070.5			1	698.9
		7	872.1			17	598.7			7	1059.8			2	710.5
		58	842.5			18	599.9			8	1048.9			3	718.0
		59	840.8	Feb. 23	13	58	764.7			9	1051.4			4	722.2
	2	0	839.8			59	769.4			10	1046.6			5	729.8
		1	840.7		14	0	781.3			11	1032.1			6	740.4
		2	842.3			1	791.8			12	1018.4			7	753.0
		3	845.2			2	799.2			13	1008.0	Mar. 13	13	58	527.9
		4	844.1			3	802.7			14	1004.9			59	512.9
		5	842.5			4	803.0			15	1007.4		14	0	502.2
		6	843.4			5	807.4			15	1006.0			1	501.3
		7	841.7			6	811.4			17	987.7			2	496.4
		58	791.1			7	816.9			18	990.8			5	492.8
		59	787.7			20	784.5			19	970.1			6	508.7
	3	0	786.5			21	772.5	Feb. 26	15	58	726.9	Apr. 3	10	9	1074.0
		1	788.8			22	762.6			59	729.7			10	1053.8
		2	787.7			23	753.9		16	0	730.6			11	1029.3
		3	790.4			24	753.5			1	733.8			12	1025.0
		4	793.7			58	741.7			2	739.5			13	1026.7
		5	793.1			59	741.7			3	739.9	Apr. 4	13	11	340.3
		6	791.6		15	0	745.8			4	748.8			12	339.9
		7	790.5			1	746.5			5	745.2			13	354.3
	14	8	679.6			2	749.5			6	743.8			14	361.1
		9	669.1			3	752.4			7	739.1			15	389.0
		10	667.3			4	752.2	Feb. 27	18	56	403.3	Apr. 13	15	58	789.5
		11	658.2			5	748.5			57	405.5			59	794.1
		12	657.1			6	744.5			58	413.0		16	0	793.7
	14	22	657.1			7	742.1			59	416.8			1	798.5
		23	651.4	Feb. 24	16	9	585.5		19	0	434.0			2	(*)
		24	656.2			10	570.8			1	420.3			8	778.5
		25	654.0			11	556.1			2	415.5			9	782.7
		26	655.5			12	547.0	Feb. 28	12	58	758.0			10	782.7
		27	660.4			13	548.3			59	767.9	Apr. 24	17	58	661.3
		28	664.0		21	58	609.9		13	0	773.5			59	652.9
		29	668.4			59	613.8			1	778.0		18	0	639.0
		30	675.4		22	0	607.9			2	785.7			1	630.2
		31	682.7			1	602.1			3	790.5			2	620.5
	16	58	723.6			2	585.5			4	785.5			3	612.6
		59	735.2			3	590.9			5	774.4			4	618.9
	17	0	733.7			4	606.7			6	760.9			5	626.2
		1	738.8			5	614.7			7	748.8			6	624.2
		2	747.8			6	623.9		16	16	449.4			7	625.5
		4	734.3			7	626.0			17	451.3		20	58	650.6
		5	725.4			58	839.5			18	457.8			59	668.8
		6	724.6			59	842.3			19	471.5		21	0	677.4
		7	730.2		23	0	843.5			20	476.4			1	689.9
		8	728.2			1	842.5	Mar. 2	13	58	555.5			2	691.1
Feb. 6		7	616.1			2	842.5			59	550.0			3	†628.2
		8	617.1			3	848.8		14	0	545.3			4	†626.6
		9	618.2			4	859.6			1	545.9			5	†619.2
		10	613.7			5	871.0			2	541.1			6	†624.9
	20	11	801.6			6	872.0			3	538.1			7	†634.2
		31	843.9			7	873.7			4	542.9	Apr. 25	6	58	844.8
		32	843.8	Feb. 25	0	58	939.2			5	563.7			59	850.0
		33	842.4			59	939.9			6	585.8		7	0	859.0
		34	843.1		1	0	942.3			7	596.7			1	866.5
		35	843.9			1	942.9			20	535.0			2	838.5
Feb. 17	16	58	682.5			2	941.8			21	535.7			3	832.1
		59	670.8			5	945.0			22	536.4			4	865.9
	17	0	661.2			6	947.6			23	532.1			5	885.9
		1	654.8			7	947.6			24	529.1			6	906.2
		2	647.9			8	946.1			25	530.0			7	891.8
		5	641.6			9	944.5			26	542.3		15	58	791.4
		6	638.9		2	58	1112.9			27	545.9			59	796.2
		7	637.9			59	1103.1			28	557.6		16	0	787.6
		8	633.5		3	0	1095.9			29	560.1			1	770.8
		9	630.9			1	1094.8	Mar. 6	20	58	681.6			2	770.1

* Lost. † Doubtful, mark reading omitted.

Special observations during auroral displays or during great magnetic disturbances—Continued.

Göttingen mean time. Magnetic declination 246° E. + tabular quantity.

1883.	h.	m.	′
Apr. 25	16	3	774.8
		4	768.1
		5	769.8
		6	775.3
		7	774.4
		8	776.9
		9	778.4
		10	781.7
		11	778.3
		12	774.0
May 16	10	58	854.3
		59	853.4
	11	0	851.4
		1	849.9
		2	846.8
		3	*892.2
		4	891.1
		5	885.6
		6	879.8
		7	877.0
		20	921.5
		21	930.8
		22	936.8
		23	942.7
		24	947.1
May 20	18	58	629.6
		59	640.8
	19	0	650.1
		1	648.8
		2	635.0
		3	647.7
		4	638.3
		5	630.4
		6	633.6
		7	640.6
		8	648.6
		9	655.0
		10	660.6
		11	666.8
		12	672.3
June 2	11	30	821.4
		31	821.6
		32	839.8
		33	844.9
		34	841.5
June 6	11	58	1021.5
		59	1017.7
	12	0	1004.5
		1	991.9
		2	976.4
		3	956.5
		4	950.4
		5	946.3
		6	937.1
		7	937.8
		20	898.7
		25	900.3
		30	874.0
		35	820.3
		40	849.3
June 17	9	58	690.9
		59	693.7
	10	0	693.8
		1	692.4
		2	697.9
		3	700.3
		4	694.9
		5	680.8
		6	671.8

1883.	h.	m.	′
June 17	10	7	663.6
		8	662.0
		9	662.1
		10	657.6
		11	662.4
		12	670.1
		40	852.7
		41	870.2
		42	879.5
		43	878.3
		44	890.4
		53	903.3
		54	909.4
		55	914.3
		56	917.7
		57	930.4
		58	942.4
		59	954.9
	11	0	965.8
		1	971.6
		2	977.6
	15	30	720.1
		31	722.1
		32	714.8
		33	718.4
		34	723.5
June 18	5	58	927.4
		59	926.4
	6	0	926.5
		1	930.0
		2	941.4
		4	945.8
		5	950.1
		6	956.7
		7	956.5
		8	956.5
	17	58	534.2
		59	539.6
	18	0	550.1
		1	564.3
		2	574.6
		3	582.5
		4	579.8
		5	574.2
		6	583.7
		7	596.1
		32	714.2
		33	712.3
		34	711.8
		35	709.0
		36	710.0
	23	58	813.0
		59	840.4
June 19	0	0	(†)
		1	859.2
		2	843.0
		3	829.0
		4	819.1
		5	819.2
		6	825.5
		7	836.0
		39	851.3
		40	855.8
		41	884.7
		42	860.6
		43	862.5
June 22	18	58	651.6
		59	677.1
	19	0	698.1

1883.	h.	m.	′
June 22	19	1	711.6
		2	715.3
		3	714.7
		4	715.4
		5	715.4
		6	715.9
		7	718.5
	20	31	591.5
		32	604.2
		33	609.6
		34	611.3
		35	608.1
June 23	5	7	837.5
		8	836.3
		9	856.7
		10	882.3
		11	896.0
June 26	15	29	739.6
		30	747.9
		31	751.8
		32	755.2
		33	757.8
June 27	18	28	737.4
		29	737.8
		30	736.8
		31	736.7
		32	736.2
	20	28	659.6
		29	657.5
		30	648.0
		31	635.9
		32	629.0
		33	624.5
		34	627.6
		35	621.0
		36	611.1
		37	606.6
June 28	9	58	785.3
		59	801.0
	10	0	817.5
		1	826.7
		2	825.1
		3	818.7
		4	814.2
		5	806.1
		6	803.0
		7.	805.3
		53	760.9
		54	764.3
		55	768.1
		56	776.9
		57	784.9
		58	792.1
		59	795.6
	11	0	800.5
		1	804.4
		2	801.7
June 30	10	58	949.1
		59	941.4
	11	0	937.8
		1	937.5
		2	937.9
		4	940.9
		5	934.8
		6	926.5
		7	931.3
		8	923.1
	15	28	691.8
		29	691.7

1883.	h.	m.	′
June 30	15	30	687.5
		31	680.7
		32	678.6
July 7	2	28	796.1
		29	795.3
		30	795.2
		31	797.2
		32	798.1
July 8	17	58	687.8
		59	717.3
	18	0	747.5
		1	762.8
		2	775.0
		3	804.3
		4	845.4
		6	881.2
		7	883.8
		8	886.4
		9	909.8
		10	912.2
		12	957.5
		13	954.0
		14	967.4
		16	1014.2
		20	1050.3
		21	1052.2
		22	1024.4
		58	640.4
		59	641.3
	19	0	629.6
		1	615.4
		2	594.0
		4	582.6
		5	598.7
		6	598.6
		7	599.3
		8	606.6
July 9	1	28	846.3
		29	842.4
		30	843.4
		31	846.1
		32	849.8
	10	28	696.8
		29	692.9
		30	686.9
		31	684.0
		32	694.3
July 10	1	58	765.1
		59	761.6
	2	0	757.7
		1	752.3
		2	742.4
		3	738.6
		4	743.7
		5	744.4
		6	744.3
		7	749.1
	3	28	943.4
		29	942.3
		30	940.1
		31	937.9
		32	932.9
	5	58	703.0
		59	706.7
	6	0	705.0
		1	695.5
		2	695.0
		3	704.1
		4	719.7

* Doubtful. † Lost.

Special observations during auroral displays or during great magnetic disturbances—Continued.

Göttingen mean time. Magnetic declination 246° E. + tabular quantity.

1883.	h.	m.	′	1883.	h.	m.	′	1883.	h.	m.	′	1883.	h.	m.	′
July 10	6	5	735.1	July 18	11	59	571.9	July 18	16	9	785.0	July 18	23	58	822.7
		6	758.3		12	0	573.4			10	780.4			59	830.7
		7	767.7			1	571.5			11	780.7	July 19	0	0	847.6
		28	650.2			2	577.8			12	783.0			1	863.9
		29	644.5			3	573.4		19	58	405.8			2	877.4
		30	641.1			4	581.8			59	419.9			3	895.9
		31	649.1			5	593.7		20	0	446.7			4	909.5
		32	659.3			6	605.9			1	471.3			5	917.7
	8	28	938.2			7	594.0			2	484.4			6	927.5
		29	934.2			20	817.1			3	500.8			7	931.7
		30	930.1			25	875.6			4	511.7			58	796.7
		31	934.8			30	898.2			5	533.0			59	778.2
		32	950.4			35	886.5			6	537.8		1	0	745.3
	11	58	751.4			40	845.3			7	538.1			1	709.5
		59	753.8			45	899.4			8	537.5			2	687.2
	12	0	727.1			50	866.7			9	532.2			3	671.0
		1	709.5			55	903.7			10	545.8			4	657.5
		2	689.1		13	0	887.4			11	552.5			5	646.7
		3	670.2		14	58	1016.2			12	548.2			6	647.2
		4	664.7			59	1017.3			28	546.2			7	646.5
		5	678.6		15	0	1026.9			29	555.5			30	616.6
		6	674.3			1	1035.7			30	575.1			31	594.1
		7	682.0			2	1036.2			31	592.9			32	562.1
		28	728.8			3	1046.0			32	607.5			33	550.6
		29	714.4			4	1024.2			33	627.9			34	542.4
		30	706.6			5	992.9			34	640.7			35	545.4
		31	704.8			6	1002.3			35	641.5			36	564.4
		32	720.9			7	989.9			36	646.4			37	579.3
July 14	16	58	732.6			58	645.7			37	644.1	July 30	17	28	658.7
		59	727.3			59	658.4			58	681.8			29	658.7
	17	0	732.3		16	0	671.6			59	686.8			30	653.2
		1	730.0			1	690.1		21	0	697.5			31	645.7
		2	730.0			2	707.3			1	709.7			32	639.9
		3	732.5			3	718.2			2	710.5		18	28	685.1
		4	742.2			4	733.1			3	710.1			29	684.0
		5	749.2			5	738.8			4	712.4			30	688.4
		6	748.6			6	764.8			5	717.5			31	693.5
		7	745.8			7	774.6			6	725.0			32	695.4
July 18	11	58	587.3			8	773.4			7	728.8				

(2) *Measures of the horizontal component of the magnetic force.*

These consist of oscillations and deflections made with magnetometer No. 12. The instrumental constants needed for the determination of the horizontal force are as follows:

Determination of the moment of mass (M) of the mass-ring accompanying the theodolite magnetometer. The ring is of gun metal, and has no distinguishing mark on it. Its weight was determined at the Coast and Geodetic Survey Office by E. B. Lefavour, June 13, 1881, and found to be 19.05 grams, or 293.98 grains; also, by other weighing, 294.02 grains; mean, 294.00 grains. The following measurements, to determine the inner and outer diameters, were made at the office, June 13, 1881, with two different instruments:

Measures by C. A. Schott. Temp., 76° Fahr.:

$$\text{Outer diameter, } \left\{\begin{matrix} 3.78 \\ 3.78 \\ 3.78 \end{matrix}\right\} \text{ centimeters and } \left\{\begin{matrix} 1.49 \\ 1.49 \\ 1.49 \end{matrix}\right\} \text{ inches.}$$

$$\text{Inner diameter, } \left\{\begin{matrix} 2.99 \\ 2.99 \end{matrix}\right\} \text{ centimeters and } \left\{\begin{matrix} 1.185 \\ 1.180 \end{matrix}\right\} \text{ inches.}$$

Measures by M. Baker. Temp., 76°.5 Fahr.:

$$\text{Outer diameter, } \left\{\begin{matrix} 3.778 \\ 3.776 \\ 3.775 \end{matrix}\right\} \text{ centimeters and } \left\{\begin{matrix} 1.49 \\ 1.49 \\ 1.49 \\ 1.4896 \\ 1.4896 \end{matrix}\right\} \text{ inches.}$$

$$\text{Inner diameter, } \left\{\begin{matrix} 2.975 \\ 2.975 \\ 2.990 \end{matrix}\right\} \text{ centimeters and } \left\{\begin{matrix} 1.17 \\ 1.17 \\ 1.175 \\ 1.177 \\ 1.174 \end{matrix}\right\} \text{ inches.}$$

Converting one measure into the other, and taking the respective means we find the outer diameter = 1.4889 inches and the inner diameter 1 1754 inches, hence

$$M_1 = \tfrac{1}{2}\,(r^2 + r_1^2)\,w = 0.91842 \text{ at } 76^\circ \text{ Fahr.,}$$

and for any other temperature t

$$M_1 = 0.91842\,[1 + 0.00002\,(t - 76^\circ)]$$

Determination of the temperature coefficient (q) of magnet L_{12}.

[Observations made at the Coast and Geodetic Survey Office by Sergeant E. Israel, June 18, 1881; magnet S_{12} suspended, L_{12} deflecting at different temperatures. Deflecting distance, 1.25 feet.]

Washington local mean time.	Circle A.	Circle B.	Temperature.	Remarks.
h. m.	° ′	′	°	
9 24 a. m.	156 41	43	73.9 Fahr.	L_{12} away.
L_{12} in hot-water jacket.				
10 19 a. m.	153 57	59	94.0	
27 a. m.	56.5	58.5	88.0	
32 a. m.	56	58	88.0	
L_{12} in ice jacket.				
10 56 a. m.	153 49.5	51.5	43.1	
11 03 a. m.	50.0	51.5	38.0	
08 a. m.	50.5	51.5	36.5	
11 a. m.	51.0	52.5	35.2	
18 a. m.	156 39.0	40.5	69.0	L_{12} removed.
L_{12} in hot-water jacket.				
11 33 a. m.	153 48.0	50.0	90.0	
41 a. m.	49.5	51.5	88.0	
L_{12} in ice jacket.				
0 02 p. m.	153 47.5	49.5	42.0	
08 p. m.	47.0	49.0	44.0	
16 p. m.	156 35.0	37.0	77.0	L_{12} removed.
1 15 p. m.	33.5	33.5	75.8	L_{12} removed.
L_{12} in hot-water jacket.				
1 45 p. m.	153 52.0	52.0	102.3	
52 p. m.	51.0	51.5	95.1	
59 p. m.	51.0	51.5	91.4	
L_{12} in ice jacket.				
2 12 p. m.	153 47.0	48.0	40.4	

Washington local mean time	Circle A.	Circle B.	Temperature.	Remarks.
h. m.	° ′	′	°	
2 16 p. m.	153 47.0	48.5	39.8 Fahr.	
24 p. m.	156 33.5	34.0	75.7	L_{12} removed.
L_{12} in hot-water jacket.				
2 51 p. m.	153 52.5	53.5	98.8	
55 p. m.	52.0	53.5	94.6	
3 00 p. m.	52.5	53.5	92.0	
L_{12} in ice jacket.				
3 31 p. m.	153 51.5	53.0	44.2	
33 p. m.	51.5	53.0	44.1	
L_{12} in hot-water jacket.				
4 15 p. m.	153 56.0	57.0	93.4	
19 p. m.	55.5	56.5	90.9	
L_{12} in ice jacket.				
4 33 p. m.	153 54.5	55.5	42.0	
38 p. m.	54.5	55.5	41.6	
L_{12} in hot-water jacket.				
4 48 p. m.	153 60.0	61.0	121.0	
52 p. m.	59.0	59.5	113.6	
L_{12} in ice jacket.				
5 11 p. m.	153 56.5	57.5	46.0	
16 p. m.	55.5	57.0	46.5	

After applying a correction for change of declination to the readings when the deflecting magnet was removed, we can form the following table:

Circle reading.	Temperature.	Alternate mean of circle readings.	Alternate temperature.	Differences.		Angle of deflection. u	Remarks.
				In angle.	In temperature.		
° ′	°	° ′	°	′	°	° ′	
153 57.5	90.0						Mean reading of S_{12}
52.9	38.2	153 55.1	89.5	2.2	51.3	2 46.6	when L_{12} was removed
52.7	80.0						
52.2	43.0	54.4	92.7	2.2	49.7	2 47.3	156° 39′.5 at 74°.3 Fahr.
56.1	96.3						
52.0	40.1						
56.7	95.1	53.7	42.1	−3.0	−53.0	2 45.8	
55.3	44.1						
58.4	92.1	56.1	43.0	−2.3	−49.1	2 43.4	
56.9	41.8						
61.7	117.3	57.5	44.0	−4.2	−73.3	2 42.0	
58.0	46.3						

$$\text{Resulting values of } q = \frac{a\ n\ \cot u}{t - t_0} = \left.\begin{array}{r} 0.00026 \\ 26 \\ 34 \\ 29 \\ 35 \end{array}\right\} \text{mean} = 0.00030 \pm 0.00001$$

Determination of the moment of mass of magnet L_{12} and appendages.—Before his departure for the Arctic region Sergeant Israel made a few trial observations of oscillations with and without the ring. On testing these they were found unsatisfactory, and as no other observations for moment of mass of L_{12} were made at Fort Conger, I caused a series of observations to be made, with the following results:

Magnetometer No. 11 being of the same pattern as No. 12, it was used for the oscillations of L_{12} without fear of any sensible effect due to a difference in the size or weight of the stirrups. From the observations made at Washington, July 6, 1886, by Mr. J. B. Boutelle, of the Coast and Geodetic Survey, I deduce the following values:

Squares of times of oscillations of L_{12}, with and without ring, of No. 11, at the magnetic observatory in my garden at Washington. Temperature 91.5° Fahr.

	Alternate means.	Diff.	Dimensions and weight of the ring No. 11.
$T^2 = 16.577$			
$T_1^2 = 28.609$	16.532	12.077	Outer diameter at 75° Fahr., 1.4886 inches,
$T^2 = 16.488$	28.596	12.108	Inner diameter at 75° Fahr., 1.1613 inches,
$T_1^2 = 28.582$	16.476	12.106	as determined by me April 29, 30, 1881.
$T^2 = 16.463$	28.546	12.083	Weight given by E. B. Lefavour, 300.767
$T_1^2 = 28.511$	16.457	12.054	grains; hence $M_1 = 0.93070$ at 75° Fahr.
$T^2 = 16.451$			
		Mean, 12.086	

In these observations the small balancing ring was near the end of the magnet, as it was supposed to have been at Fort Conger; but in order to place the ring over the magnet it had to be shifted towards the center, to allow for which change the average difference, $T_1^2 - T^2$, as above, was increased to 12 255.*

We have:

$$M_1 = 0.93070\,[1 + 0.0000\text{[illegible]}\,(t - 75° \text{ Fahr.})] \qquad M_1 \frac{T^2}{T_1^2 - T^2} = 1.2526 \qquad M = 1.2526\,[1 + 0.0000136\,(t - 91.5° \text{ Fahr.})]$$

*Weight of balancing ring, 0.270 grams or 4.2 grains, or about $\frac{1}{71.6}$ of the mass ring, by which fraction the observed difference was increased.

Table of values of log M for various temperatures.

At 60° Fahr.	log M = 0.09762
50	57
40	51
30	45
20	39
10	33
0	27
—10	21
—20	15
—30	09
—40	03

Observations for the value of the coefficient P, depending upon the distribution of magnetism within the magnet.—The few observations taken at Fort Conger include a range of deflecting distance between 1 and 1⅔ of a foot, and give values of P falling on both sides of zero. I have adopted $P=0$ in consideration of the fact that the lengths of the two magnets were of the proper proportion for which experience has shown this coefficient to be very nearly zero.

The observations and reductions are presented in the form adopted by the Coast and Geodetic Survey.

RECORD OF DEFLECTIONS WITH PARTIAL REDUCTION.

Sergeant E. ISRAEL, *Observer.*

Deflections with theodolite magnetometer.

Date, September 16, 1881. Station, Fort Conger, Grinnell Land. Instrument, Magnetometer No. 12. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1.25$ feet. Log. $r = 0.09691$.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	138		37.88				
	W.					2	119		21.75
	E.	3	138		33.75				
	W.					4	119		30.25
	E.	5	138		42.37				
	Mean			138	38.00			119	26.00
West.	W.					6	119		26.30
	E.	7	138		52.50				
	W.					8	119		25.25
	E.	9	138		61.00				
	W.					10	119		30.75
	Mean			138	56.75			119	27.50

Computation. (Washington mean time.)

$$\frac{m}{H} = \tfrac{1}{2} r^3 \sin. u \left(1 - \frac{P}{r^2} \ldots\ldots\right)$$

	° ′
Magnet East, $2u =$	19 12.00
Magnet West, $2u =$	19 29.25
Mean	19 20.62
$u =$	9 40.31

Time of beginning	2^h 05^m	Temp. + 21.0 Fahr.	
Time of ending, p. m.	2 50	Temp. + 19.0	
Mean	2 28	$t = + 20.0$	

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.29073
Sin. u	9.22532
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.21502

Date, September 18, 1881. Station, Fort Conger, Grinnell Land. Instrument, Magnetometer No. 12. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1.25$ feet. Log. $r = 0.09691$.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	140		14.00				
	W.					2	120		51.50
	E.	3	140		20.50				
	W.					4	120		57.25
	E.	5	140		23.50				
	Mean			140	19.33			120	54.38
West.	W.					6	121		09.25
	E.	7	140		24.25				
	W.					8	121		09.00
	E.	9	140		25.25				
	W.					10	121		06.25
	Mean			140	24.75			121	08.17

Computation. (Göttingen mean time.)

$$\frac{m}{H} = \tfrac{1}{2} r^3 \sin. u \left(1 - \frac{P}{r^2} \ldots\ldots\right)$$

	° ′
Magnet East, $2u =$	19 24.95
Magnet West, $2u =$	19 16.58
Mean	19 20.76
$u =$	9 40.38

Time of beginning	9^h 10^m	Temp.	20.0 Fahr.
Time of ending, p. m.	9 42	Temp.	19.0
Mean	9 26	$t =$	19.5

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.29073
Sin. u	9.22537
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.21507

September 20, 1881. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	W.					1	119		57.75
	E.	2	139		10.75				
	W.					3	120		03.50
	E.	4	139		36.25				
	W.					5	120		00.50
	Mean			139	23.50			120	00.58
West.	E.	6	139		28.75				
	W.					7	119		59.50
	E.	8	139		27.75				
	W.					9	119		57.75
	E.	10	139		30.75				
	Mean			139	29.08			119	58.62

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	19 22.92
Magnet West, $2u =$	19 30.46
Mean	19 26.69
$u =$	9 43.34

Time of beginning	8^h 25^m	Temp. − 20.5 Fahr.	
Time of ending, p. m.	8 52	Temp. − 18.0	
Mean	8 38	$t = - 19.25$	

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.29073
Sin. u	9.22756
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.21726

November 21, 1881. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	134		54.50				
	W.					2	115		24.25
	E.	3	134		51.75				
	W.					4	115		25.75
	E.	5	134		58.25				
	Mean			134	54.83			115	25.00
West.	W.					6	115		36.75
	E.	7	134		31.25				
	W.					8	115		36.25
	E.	9	134		27.25				
	W.					10	115		34.75
	Mean			134	34.25			115	35.92

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	19 29.83
Magnet West, $2u =$	18 58.33
Mean	19 14.08
$u =$	9 37 04

Time of beginning	7^h 32^m	Temp. − 24.0 Fahr.	
Time of ending, p. m.	7 54	Temp. − 17.5	
Mean	7 43	$t = - 20.75$	

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.29073
Sin. u	9.22289
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.21259

Deflections with theodolite magnetometer—Continued.

December 20, 1881. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r=1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			Circle readings.				Circle readings.		
			° ′	′	′		° ′	′	′
East.	E.	1	144		28.00				
	W.					2	125		11.25
	E.	3	144		30.75				
	W.					4	125		16.00
	E.	5	144		36.50				
	Mean			144	31.75			125	13.62
West.	W.					6	125		41.75
	E.	7	144		61.75				
	W.					8	125		38.50
	E.	9	144		51.00				
	W.					10	125		34.00
	Mean			144	56.38			125	38.08

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u=$	19 18.13		$\frac{1}{2}$	9.69897
Magnet West, $2u=$	19 18.30		r^3	0.29073
Mean	19 18 22		Sin. u	9.22443
$u=$	9 39.11		$1-\frac{P}{r^2}$	0.00000
Time of beginning	6^h 15^m	Temp. − 26.0 Fahr.		
Time of ending, p. m.	6 50	Temp. − 24.0	$\frac{m}{H}$	9.21413
Mean	6 32	$t=-25.0$		

February 21, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r=1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			Circle readings.				Circle readings.		
			° ′	′	′		° ′	′	′
East.	E.	1	140		17 00				
	W.					2	121		16.25
	E.	3	140		11 00				
	W.					4	121		24.25
	E.	5	140		36.50				
	Mean			140	21.50			121	20.25
West.	W.					6	121		05.00
	E.	7	140		52.25				
	W.					8	121		05.75
	E.	9	140		50.50				
	W.					10	121		06.00
	Mean			140	51.38			121	05.58

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u=$	19 01.25		$\frac{1}{2}$	9.69897
Magnet West, $2u=$	19 45.80		r^3	0.29073
Mean	19 23.52		Sin. u	9.22640
$u=$	9 41.76		$1-\frac{P}{r^2}$	0.00000
Time of beginning	7^h 08^m	Temp. + 29.0 Fahr.		
Time of ending, p. m.	7 45	Temp. + 32.0	$\frac{m}{H}$	9.21610
Mean	7 26	$t=+30.5$		

February 22, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r=1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			Circle readings.				Circle readings.		
			° ′	′	′		° ′	′	′
East.	E.	1	141		01.00				
	W.					2	121		12.50
	E	3	139		42.75				
	W.					4	120		22.25
	E.	5	139		37.75				
	Mean			140	07.17			120	47.38
West.	W.					6	120		24.75
	E.	7	139		21.75				
	W.					8	120		16.50
	E.	9	139		20.25				
	W.					10	120		14.25
	Mean			139	21.00			120	18.50

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u=$	19 19.79		$\frac{1}{2}$	9.69897
Magnet West, $2u=$	19 02.50		r^3	0.29073
Mean	19 11.14		Sin. u	9.22179
$u=$	9 35.57		$1-\frac{P}{r^2}$	0.00000
Time of beginning	7^h 10^m	Temp. + 32 0 Fahr.		
Time of ending, p. m.	7 42	Temp. + 41.9	$\frac{m}{H}$	9.21149
Mean	7 26	$t=36.95$		

February 23, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r=1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			Circle readings.				Circle readings.		
			° ′	′	′		° ′	′	′
East.	E.	1	140		34.75				
	W.					2	121		11.25
	E.	3	140		27.25				
	W.					4	121		28.75
	E.	5	140		21.50				
	Mean			140	27.83			121	20.00
West.	W.					6	121		15.25
	E.	7	140		39.50				
	W.					8	121		12.25
	E.	9	140		38.25				
	W.					10	121		12.50
	Mean			140	38.83			121	13.33

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u=$	19 07.83		$\frac{1}{2}$	9.69897
Magnet West, $2u=$	19 25.55		r^3	0.29073
Mean	19 16.69		Sin. u	9.22386
$u=$	9 38.34		$1-\frac{P}{r^2}$	0.00000
Time of beginning	8^h 08^m	Temp. − 4.0 Fahr.		
Time of ending, p. m.	8 35	Temp. + 11 0	$\frac{m}{H}$	9.21356
Mean	8 22	$t=+3.5$		

Deflections with theodolite magnetometer—Continued.

March 16, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{19} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	140		03.00				
	W.					2	120		56.00
	E.	3	140		12.75				
	W.					4	120		49.50
	E.	5	140		16.75				
	Mean			140	10.83			120	52.75
West.	W					6	120		50.50
	E.	7	140		43.00				
	W.					8	120		52.50
	E.	9	140		51.75				
	W.					10	120		47.00
	Mean			140	47.38			120	50.00

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u =$	19 18.08		$\frac{1}{r^3}$	9.69897
Magnet West, $2u =$	19 57.38			0.29073
Mean	19 37.73		Sin. u	9.23161
$u =$	9 48.86		$1-\frac{P}{r^2}$	0.00000
Time of beginning	$10^h\ 15^m$	Temp. +20.1° Fahr.		
Time of ending, a. m.	10 42	Temp. +24.5		
Mean	10 28	$t = +22.3$	$\frac{m}{H}$	9.22131

March 17, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{19} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	140		58.50				
	W.					2	121		47.75
	E.	3	140		37.75				
	W.					4	121		32.50
	E.	5	140		31.00				
	Mean			140	42.42			121	40.12
West.	W.					6	121		20.50
	E.	7	140		48.00				
	W.					8	121		23.25
	E.	9	140		48.00				
	W.					10	121		15.75
	Mean				48.00			121	19.83

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u =$	19 02.30		$\frac{1}{r^3}$	9.69897
Magnet West, $2u =$	19 28.17			0.29073
Mean	19 15.24		Sin. u	9.22332
$u =$	9 37.62		$1-\frac{P}{r^2}$	0.00000
Time of beginning	$6^h\ 10^m$	Temp. +37.0° Fahr.		
Time of ending, a. m.	6 35	Temp. +41.0		
Mean	6 22	$t = +39.0$	$\frac{m}{H}$	9.21302

March 18, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{19} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	140		02.50				
	W.					2	121		55.50
	E.	3	140		42.50				
	W.					4	121		29.00
	E.	5	140		32.75				
	Mean			140	25.92			121	42.25
West.	W.					6	121		16.75
	E.	7	140		57.50				
	W.					8	121		12.00
	E.	9	140		52.75				
	W.					10	121		17.50
	Mean			140	55.12			121	15.42

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u =$	18 43.67		$\frac{1}{r^3}$	9.69897
Magnet West, $2u =$	19 39.70			0.29073
Mean	19 11.68		Sin. u	9.22200
$u =$	9 35.84		$1-\frac{P}{r^2}$	0.00000
Time of beginning	$6^h\ 13^m$	Temp. +27.0° Fahr.		
Time of ending, a. m.	6 37	Temp. +34.0		
Mean	6 25	$t = +30.5$	$\frac{m}{H}$	9.21170

April 21, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{19} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	139		67.00				
	W.					2	120		38.00
	E.	3	139		52.25				
	W.					4	120		36.25
	E.	5	139		53.00				
	Mean			139	57.42			120	37.12
West.	W.					6	120		43.25
	E.	7	139		62.75				
	W.					8	120		21.50
	E.	9	139		62.00				
	W.					10	120		43.00
	Mean			140	02.38			120	35.92

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u =$	19 20.30		$\frac{1}{r^3}$	9.69897
Magnet West, $2u =$	19 26.46			0.29073
Mean	19 23.38		Sin. u	9.22634
$u =$	9 41.69		$1-\frac{P}{r^2}$	0.00000
Time of beginning	$3^h\ 05^m$	Temp. −1.5° Fahr.		
Time of ending, p. m.	3 27	Temp. +2.8		
Mean	3 16	$t = +0.65$	$\frac{m}{H}$	9.21604

Deflections with theodolite magnetometer—Continued.

May 20, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance r = 1.00 feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
		Circle readings.				Circle readings.			
			° ′	′	′		° ′	′	′
East.	E.	1	147		54.75				
	W.					2	109		55.25
	E.	3	147		52.00				
	W.					4	109		58 50
	E.	5	148		58.00				
	Mean			148	14.92			109	56.88
West.	W.					6	112		03.75
	E.	7	148		57.00				
	W.					8	111		33.25
	E.	9	149		07.25				
	W.					10	111		53.25
	Mean			149	02.12			111	50.08

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u$ =	38 18.04
Magnet West, $2u$ =	37 12.04
Mean	37 45.04
u =	18 52.52

Time of beginning	8^h 02^m	Temp. + 35°.4 Fahr.
Time of ending, p. m.	8 37	Temp. + 37.2
Mean	8 20	t = + 36.3

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.00000
Sin. u	9.50989
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.20886*

May 20, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance r = 1.25 feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
		Circle readings.				Circle readings.			
			° ′	′	′		° ′	′	′
East.	E.	1	139		41.50				
	W.					2	120		47.00
	E.	3	139		28.75				
	W.					4	120		40.75
	E.	5	139		29.00				
	Mean			139	33.08			120	43.88
West.	W.					6	120		37.00
	E.	7	139		30.50				
	W.					8	120		31.00
	E.	9	139		09.75				
	W.					10	119		48.75
	Mean			139	20.12			120	18.92

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u$ =	18 49.20
Magnet West, $2u$ =	19 01.20
Mean	18 55.20
u =	9 27.60

Time of beginning	8^h 40^m	Temp. + 37°.2 Fahr.
Time of ending, p. m.	9 04	Temp. + 37.0
Mean	8 52	t = + 37.1

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.29073
Sin. u	9.21579
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.20549*

May 21, 1882.† Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance r = $1\frac{1}{6}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
		Circle readings.				Circle readings.			
			° ′	′	′		° ′	′	′
East.	E.	1	141		52.75				
	W.					2	119		40.25
	E.	3	141		65.50				
	W.					4	118		44.25
	E.	5	141		39.25				
	Mean			141	52.50			119	12.25
West.	W.					6	118		05.75
	E.	7	141		40.50				
	W.					8	117		53.25
	E.	9	141		28.75				
	W.					10	117		55.50
	Mean			141	34.62			117	58.17

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u$ =	22 40.25
Magnet West, $2u$ =	23 36.45
Mean	23 08.35
u =	11 34.18

Time of beginning	8^h 02^m	Temp. + 32°.0 Fahr.
Time of ending, p. m.	8 28	Temp. + 38.1
Mean	8 15	t = + 35.05

	Log'ms
$\frac{1}{2}$	9.69897
r^3	0.20084
Sin. u	9.30224
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.20205

May 21, 1882.† Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance r = $1\frac{2}{3}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
		Circle readings.				Circle readings.			
			° ′	′	′		° ′	′	′
East.	E.	1	133		48.50				
	W.					2	125		59.00
	E.	3	133		47.25				
	W.					4	125		22.50
	E.	5	133		15.75				
	Mean			133	37.17			125	40.75
West.	W.					6	125		13.00
	E.	7	133		04.75				
	W.					8	125		01.75
	E.	9	133		00.75				
	W.					10	125		02 50
	Mean			133	02.75			125	05.75

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u$ =	7 56.42
Magnet West, $2u$ =	7 57.00
Mean	7 56.71
u =	3 58.36

Time of beginning	8^h 29^m	Temp. + 38°.1
Time of ending, p. m.	8 50	Temp. + 38.4
Mean	8 40	t = 38.25

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.66555
Sin. u	8.84061
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.20513

*Mean of two determinations, 9.20718.

† A day of disturbance; oscillations had to be given up.

Deflections with theodolite magnetometer—Continued.

June 20, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1\frac{1}{4}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	140		58.50				
	W.					2	117		01.75
	E.	3	140		57.25				
	W.					4	116		55.25
	E.	5	140		61.25				
	Mean			140	59.00			116	58.50
West.	W.					6	117		30.70
	E.	7	141		26.50				
	W.					8	117		34.25
	E.	9	141		23.50				
	W.					10	117		44.00
	Mean			141	25.00			117	36.32

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	24 00.50
Magnet West, $2u =$	23 48.68
Mean	23 54.59
$u =$	11 57.30

Time of beginning	8h 04m
Time of ending, p. m.	8 25
Mean	8 14

Temp. +45.2° Fahr.
Temp. +49.0
$t = +47.1$

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.20084
Sin. u	9.31627
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	*9.21608

June 20, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1\frac{3}{4}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	133		40.00				
	W.					2	125		37.50
	E.	3	133		49.75				
	W.					4	125		56.50
	E.	5	133		46.00				
	Mean			133	45.25			125	47.00
West.	W.					6	125		41.50
	E.	7	133		38.75				
	W.					8	125		32.50
	E.	9	133		38.00				
	W.					10	125		44.00
	Mean			133	38.38			125	39.33

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	7 58.25
Magnet West, $2u =$	7 59.05
Mean	7 58.65
$u =$	3 59.32

Time of beginning	8h 25m
Time of ending, p. m.	8 46
Mean	8 36

Temp. +49.0° Fahr.
Temp. +50.3
$t = +49.65$

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.66555
Sin. u	8.84235
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	*9.20687

June 21, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1\frac{1}{4}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	141		45.00				
	W.					2	117		51.00
	E.	3	141		44.25				
	W.					4	117		40.25
	E.	5	141		35.50				
	Mean			141	41.58			117	45.62
West.	W.					6	117		39.50
	E.	7	141		31.75				
	W.					8	117		23.50
	E.	9	141		12.25				
	W.					10	117		14.75
	Mean			141	22.00			117	25.92

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	23 55.96
Magnet West, $2u =$	23 56.08
Mean	23 56.02
$u =$	11 58.01

Time of beginning	8h 06m
Time of ending, p. m.	8 32
Mean	8 19

Temp. +53.0° Fahr.
Temp. +58.0
$t = +55.5$

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.20084
Sin. u	9.31669
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	†9.21650

June 21, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1\frac{3}{4}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	133		00.00				
	W.					2	125		04.75
	E.	3	133		24.00				
	W.					4	125		31.50
	E.	5	133		31.25				
	Mean			133	18.42			125	18.12
West.	W.					6	125		59.50
	E.	7	133		00.75				
	W.					8	125		12.00
	E.	9	133		27.50				
	W.					10	125		29.50
	Mean			133	14.12			125	33.67

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	8 00.30
Magnet West, $2u =$	7 40.45
Mean	7 50.38
$u =$	3 55.19

Time of beginning	8h 32m
Time of ending, p. m.	8 56
Mean	8 44

Temp. +58.0° Fahr.
Temp. +58.2
$t = 58.1$

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.66555
Sin. u	8.83480
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	†9.19932

* Mean of the two sets, 9.21148.

† Mean of the two determinations, 9.20791.

Deflections with theodolite magnetometer—Continued.

June 22, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{13} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	138		03.50				
	W.					2	119		27.75
	E.	3	138		02.00				
	W.					4	119		27.50
	E.	5	138		21.25				
	Mean			138	08.92			119	27.62
West.	W.					6	119		42.00
	E.	7	138		44.50				
	W.					8	119		36.00
	E.	9	138		32.50				
	W.					10	119		26.75
	Mean			138	38.50			119	34.92

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	18 41.30
Magnet West, $2u =$	19 03.58
Mean	18 52.44
$u =$	9 26.22

	h m		
Time of beginning	9 05	Temp. + 58.2 Fahr.	
Time of ending, p. m.	9 24	Temp. + 59.1	
Mean	9 14	$t = 58.05$	

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.29073
Sin. u	9.21475
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.20445

September 2, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{13} suspended. Distance $r = 1\frac{1}{3}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	141		43.25				
	W.					2	119		21.25
	E.	3	142		01.25				
	W.					4	119		42.00
	E.	5	142		15.75				
	Mean			142	00.08			119	31.62
West.	W.					6	119		37.00
	E.	7	142		39.75				
	W.					8	119		30.00
	E.	9	142		40.50				
	W.					10	119		19.00
	Mean			142	40.12			119	28.67

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	22 28.46
Magnet West, $2u =$	23 11.45
Mean	22 49.96
$u =$	11 24.98

	h m	
Time of beginning	8 10	Temp. + 49.5 Fahr.
Time of ending, p. m.	8 30	Temp. + 51.8
Mean	8 20	$t = 50.65$

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.20084
Sin. u	9.29654
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.19635

September 18, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{13} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	138		15.00				
	W.					2	119		08.50
	E.	3	138		06.50				
	W.					4	119		01.75
	E.	5	138		02.50				
	Mean			138	08.00			119	05.12
West.	W.					6	119		08.00
	E.	7	138		06.75				
	W.					8	119		01.50
	E.	9	137		55.25				
	W.					10	118		45.00
	Mean			138	01.00			118	58.17

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	19 02.88
Magnet West, $2u =$	19 02.83
Mean	19 02.86
$u =$	9 51.43

	h m	
Time of beginning	8 10	Temp. + 29.5 Fahr.
Time of ending, p. m.	8 40	Temp. + 29.1
Mean	8 25	$t = + 29.3$

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.29073
Sin. u	9.23349
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	0.22319

October 17, 1882. Magnet L_{13} deflecting at right angles to Magnet S_{13} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	139		18.00				
	W.					2	119		55.25
	E.	3	139		21.25				
	W.					4	120		09.75
	E.	5	139		15.75				
	Mean			139	18.33			120	02.50
West.	W.					6	120		15.00
	E.	7	139		04.25				
	W.					8	120		00.00
	E.	9	139		17.00				
	W.					10	120		25.00
	Mean			139	10.62			120	13.33

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	19 15.83
Magnet West, $2u =$	18 57.29
Mean	19 06.56
$u =$	9 33.28

	h m	
Time of beginning	8 10	Temp. + 15.1 Fahr.
Time of ending, p. m.	8 36	Temp. + 22.3
Mean	8 23	$t = + 18.7$

	Log'ms.
$\frac{1}{r^3}$	9.69897
	0.29073
Sin. u	9.22008
$1-\frac{P}{r^2}$	0.00000
$\frac{m}{H}$	*9.20978

*See second set.

Deflections with theodolite magnetometer—Continued.

October 17, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1\frac{1}{4}$ feet.

Magnet.	North end.	No	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	133		48.00				
	W.					2	125		55.50
	E.	3	133		50.50				
	W.					4	[illegible]		55.50
	E.	5	133		52.75				
	Mean			133	[illegible]			125	55.50
West.	W.					6	126		05.00
	E.	7	133		[illegible]				
	W.					[illegible]	126		06.00
	E.	9	134		[illegible]				
	W.					10	[illegible]		11.50
	Mean			134	01.00			126	07.50

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	7 54.92
Magnet West, $2u =$	7 53.50
Mean	7 54.21
$u =$	3 57.10

Time of beginning $8^h\ 36^m$ | Temp. +22.3° Fahr.
Time of ending, p. m. 8 55 | Temp. +32.0
Mean 8 46 | $t = +27.15$

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.66555
Sin. u	8.83831
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	*9.20283

November 2, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1\frac{1}{4}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	
East.	E.	1	143		04.25				
	W.					2	119		[illegible]
	E.	3	142		33.00				
	W.					4	119		10.25
	E.	5	142		29.50				
	Mean			142	42.25			119	17.25
West.	W.					6	119		19.75
	E.	7	142		45.00				
	W.					8	119		22.00
	E.	9	142		44.25				
	W.					10	119		12.50
	Mean			142	44.62			119	18.08

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	23 25.00
Magnet West, $2u =$	23 26.54
Mean	23 25.77
$u =$	11 42.88

Time of beginning $8^h\ 10^m$ | Temp. +30.9° Fahr.
Time of ending, p. m. 8 28 | Temp. +34.2
Mean 8 19 | $t = +32.55$

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.20084
Sin. u	9.30758
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	†9.20739

November 2, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1\frac{1}{4}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	134		38.75				
	W.					2	126		37.50
	E.	3	134		37.50				
	W.					4	126		38.25
	E.	5	134		41.25				
	Mean			134	39.17			126	37.88
West.	W.					6	126		35.25
	E.	7	134		25.50				
	W.					8	126		21.00
	E.	9	134		24.25				
	W.					10	126		28.75
	Mean			134	24.88			126	28.33

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	8 01.29
Magnet West, $2u =$	7 56.55
Mean	7 58.92
$u =$	3 59.46

Time of beginning $8^h\ 28^m$ | Temp. +34.2° Fahr.
Time of ending, p. m. 8 44 | Temp. +37.3
Mean 8 36 | $t = +35.75$

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.66555
Sin. u	8.84261
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	‡9.20713

December 5, 1882. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance $r = 1.25$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
			° ′	′	′		° ′	′	′
East.	E.	1	139		30.00				
	W.					2	120		34.75
	E.	3	139		31.00				
	W.					4	120		40.25
	E.	5	139		24.50				
	Mean			139	28.50			120	37.50
West.	W.					6	120		23.75
	E.	7	139		40.25				
	W.					8	120		28.00
	E.	9	139		33.75				
	W.					10	120		13.75
	Mean			139	37.00			120	21.83

Computation. (Göttingen mean time.)

	° ′
Magnet East, $2u =$	18 51.00
Magnet West, $2u =$	19 15.17
Mean	19 03.08
$u =$	9 31.54

Time of beginning $3^h\ 10^m$ | Temp. +32.0° Fahr.
Time of ending, p. m. 3 33 | Temp. +44.1
Mean 3 22 | $t = +38.05$

	Log'ms.
$\frac{1}{2}$	9.69897
r^3	0.29073
Sin. u	9.21877
$1 - \frac{P}{r^2}$	0.00000
$\frac{m}{H}$	9.20847

* Mean of the two sets, 9.20630. † See second set. ‡ Mean of the two sets, 9.20726.

Deflections with theodolite magnetometer—Continued.

April 2, 1883. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance r = 1.25 feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
		Circle readings.				Circle readings.			
			° ′	′	′		° ′	′	′
East.	E.	1	139		45.25				
	W.					2	121		02.00
	E.	3	139		42.25				
	W.					4	121		00.00
	E.	5	139		45.25				
	Mean			139	44.25			121	01.00
West.	W.					6	120		53.75
	E.	7	140		05.25				
	W.					8	120		52.50
	E.	9	140		11.25				
	W.					10	121		03.25
	Mean			140	08.25			120	56.50

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u$ =	18 43.25		$\frac{1}{r^3}$	9.69897
Magnet West, $2u$ =	19 11.75			0.29073
Mean	18 57.50		Sin. u	9.21666
u =	9 28.75		$1-\frac{P}{r^2}$	0.00000
Time of beginning	1h 10m	Temp. +44.6° Fahr.		
Time of ending, a. m.	1 30	Temp. +45.1		
Mean	1 20	t = +44.85	$\frac{m}{H}$	9.20636

July 5, 1883. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance r = 1.25 feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
		Circle readings.				Circle readings.			
			° ′	′	′		° ′	′	′
East.	E.	1	137		43.75				
	W.					2	119		12.00
	E.	3	137		57.25				
	W.					4	119		28.25
	E.	5	138		03.25				
	Mean			137	54.75			119	20.12
West.	W.					6	119		17.25
	E.	7	138		27.25				
	W.					8	119		26.25
	E.	9	138		35.75				
	W.					10	119		37.75
	Mean			138	31.50			119	27.08

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u$ =	18 34.63		$\frac{1}{r^3}$	9.69897
Magnet West, $2u$ =	19 04.42			0.29073
Mean	18 49.52		Sin. u	9.21364
u =	9 24.76		$1-\frac{P}{r^2}$	0.00000
Time of beginning	8h 16m	Temp. +50.0° Fahr.		
Time of ending, p. m.	8 40	Temp. +52.3		
Mean	8 28	t = 51.15	$\frac{m}{H}$	9.20334

August 8, 1883. Magnet L_{12} deflecting at right angles to Magnet S_{12} suspended. Distance r = $1\frac{1}{4}$ feet.

Magnet.	North end.	No.	A	B	Mean.	No.	A	B	Mean.
		Circle readings.				Circle readings.			
			° ′	′	′		° ′	′	′
East.	E.	1	140 23.5	24.0	23.75				
	W.					2	121 22.0	22.0	22.00
	E.	3	140 19.5	19.5	19.50				
	W.					4	121 22.5	23.0	22.75
	E.	5	140 18.0	18.0	18.00				
	Mean			140	20.42			121	22.38
West.	W.					6	121 45.5	46.0	45.75
	E.	7	140 58.0	58.0	58.00				
	W.					8	121 52.5	52.5	52.50
	E.	9	140 32.0	32.0	32.00				
	W.					10	121 18.0	18.0	18.00
	Mean			140	45.00			121	38.75

Computation. (Göttingen mean time.)

	° ′			Log'ms.
Magnet East, $2u$ =	18 58.04		$\frac{1}{r^3}$	9.69897
Magnet West, $2u$ =	19 06.25			0.29073
Mean	19 02.15		Sin. u	9.21841
u =	9 31.07		$1-\frac{P}{r^2}$	0.00000
Time of beginning	8h 45m	Temp. 45.2° Fahr.		
Time of ending, a. m.	9 06	Temp. 45.6		
Mean	8 56	t = 45.4	$\frac{m}{H}$	9.20811

RECORD OF OSCILLATIONS AND COMPUTATION OF HORIZONTAL FORCE.

Sergeant E. ISRAEL, *Observer.*

[September 16, 1881. Station, Fort Conger, Grinnell Land. Instrument, Magnetometer No. 12. Magnet L_{12} suspended. Chronometer (?); daily rate gaining 5.5^s on mean time.]

Number of oscillations.	Chronometer time. h.	m.	s.	Temp. t' (Fahr.) °	Extreme scale readings.		Time of 96 oscillations. m.	s.
0	11	31	53.4	27.0	15.8	22.4		
8		32	54.5					
16		33	55.3					
24		34	56.7					
32		35	58.6					
40		37	00.0					
48		38	01.0	25.0	17.0	21.8		
96		44	13.6				12	20.2
104		45	16.4					21.9
112		46	16.0					20.7
120		47	18.2					21.5
128		48	20.5					21.9
136		49	22.0	23.0	18.3	21.0		22.0
Means				25.0			12	21.37

Computation.

$$T^2 = T'^2\left(1+\frac{h}{f}\right)\left(1-(t'-t)q\right)$$

		s.
Observed time of 96 oscillations	=	741.37
Time of one oscillation	=	7.7226
Correction for rate	= −	0.0005
T'	=	7.7221

			Logarithms.
q	0.00030	T'	0.88774
$t'-t$	+5.0	T'^2	1.77548
$(t'-t)q$	+0.00150	$1+\frac{h}{f}$	0.00181
$1-(t'-t)q$	0.99850	$1-(t'-t)q$	9.99935
		Induction (supposed).	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.77684
		(ar. co.) T^2	8.22316
		π^2	0.99430
		M	0.09739
		mH	9.31485
$m=0.1841$		m	9.26494
$H=1.122$		H	0.04991

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.
Mean $v=8.21$			

Value of one scale-division $=2.737'$.	Logarithms.
$v'=22.5'$	
$5400'+v'$	3.73420
5400 (ar. co.)	6.26761
$1+\frac{h}{f}$	0.00181

* Observations of deflections: September 16, 2^h 28^m p. m., Washington time. Temperature, $t=+20.0°$ Fahr.

	Logarithms.
* $\frac{m}{H}$	9.21502
mH	9.31485
m^2	8.52987
m	9.26494

[September 18, 1881. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time. h.	m.	s.	Temp. t' (Fahr.) °	Extreme scale readings.		Time of 80 oscillations. m.	s.
0	9	48	18.0	19.0	15.8	22.4		
8		49	19.2					
16		50	20.4					
24		51	21.0					
32		52	22.7					
40		53	24.4	19.0	17.0	21.8		
80		58	29.7				10	11.7
88	...	...	...				...	...
96	10	00	30.0					09.6
104		01	30.5					09.5
112		02	30.4					07.7
120		03	31.6	18.0	18.3	21.0		07.2
Means				18.7			10	09.14

Computation.

		s.
Observed time of 80 oscillations	=	609.14
Time of one oscillation	=	7.6143
Correction for rate	= −	0.0208
T'	=	7.5935

			Logarithms.
q	0.00030	T'	0.88044
$t'-t$	−0.8	T'^2	1.76088
$(t'-t)q$	−0.00024	$1+\frac{h}{f}$	0.00150
$1-(t'-t)q$	1.00024	$1-(t'-t)q$	0.00010
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.76268
		(ar. co.) T^2	8.23732
		π^2	0.99430
		M	0.09739
		mH	9.32901
$m=0.1871$		m	9.27204
$H=1.140$		H	0.05697

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.
Mean $v=6.80$			

Value of one scale-division $=2.737'$.	Logarithms.
$v'=18.6'$	
$5400'+v'$	3.73389
5400 (ar. co.)	6.26761
$1+\frac{h}{f}$	0.00150

* Observations of deflections: September 18, 9^h 26^m p. m., Göttingen time. Temperature, $t=+19.5°$ Fahr.

	Logarithms.
* $\frac{m}{H}$	9.21507
mH	9.32901
m^2	8.54408
m	9.27204

Record of oscillations and computation of horizontal force—Continued.

[November 20, 1881. Magnet L_{18} suspended. Sidereal chronometer No. 198; daily rate gaining $3^m\ 59^s$ on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.
	h. m. s.	°			m. s.
0	12 39 58.0	−16.0	27.0	36.0	
8	41 00.1				
16	42 01.6				
24	43 03.1				
32	44 04.8				
40	45 06.2	−13.0	26.1	39.0	
80	50 14.9				10 16.9
88	51 16.4				16.3
96	52 18.3				16.7
104	53 19.7				16.6
112	54 21.5				16.7
120	55 23.0	−12.0	23.0	39.5	16.8
	Means	−13.7			10 16.67

Coefficient of torsion. Tors. circle.	Scale.		Mean.	Differences.	Value of one scale-division $=2.737'$.	Logarithms.
					$v'=6.6'$	
					$5400'+v'$	3.73292
					5400 (ar. co.)	6.26761
					$1+\frac{h}{f}$	0.00053
Mean $v=2.42$						

Computation.

	s.
Observed time of 80 oscillations =	616.67
Time of one oscillation =	7.7084
Correction for rate = −	0.0211
$T'=$	7.6873

			Logarithms.
		T'	0.88577
q	0.00030		
$t'-t$	+5.55	T'^2	1.77155
$(t'-t)q$	+0.00166	$1+\frac{h}{f}$	0.00053
$1-(t'-t)q$	0.99834	$1-(t'-t)q$	9.99928
		Induction.	0.00020
		T^2	1.77156
$mH=\frac{\pi^2 M}{T^2}$		(ar. co.) T^2	8.22844
		π^2	0.99430
		M	0.09715
		mH	9.31989
$m=0.1856$		m	9.26858
$H=1.125$		H	0.05131

* Observations of deflections: November 20, $8^h\ 38^m$ p. m., Göttingen time. Temperature, $t=-19.25°$ Fahr.

	Logarithms.
$\frac{{}^*m}{H}$	9.21726
mH	9.31989
m^2	8.53715
m	9.26858

[November 21, 1881. Magnet L_{18} suspended. Sidereal chronometer No. 198; daily rate gaining $3^m\ 59^s$ on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.
	h. m. s.	°			m. s.
0	12 40 33.5	−25.0	23.0	42.0	
8	41 34.0				
16	42 36.0				
24	43 39.0				
32	44 41.7				
40	45 42.7	−22.0	25.0	41.2	
80	50 55.8				10 22.3
88	51 57.9				23.9
96	53 00.5				24.5
104	54 02.7				23.7
112	55 05.0				23.3
120	56 07.0	−20.0	27.4	38.7	24.3
	Means	−22.3			10 23.67

Coefficient of torsion. Tors. circle.	Scale.		Mean.	Differences.	Value of one scale-division $=2.737'$.	Logarithms.
					$v'=1.9'$	
					$5400'+v'$	3.73255
					5400 (ar. co.)	6.26761
					$1+\frac{h}{f}$	0.00016
Mean $v=0.69$						

Computation.

	s.
Observed time of 80 oscillations =	623.67
Time of one oscillation =	7.7959
Correction for rate = −	0.0214
$T'=$	7.7745

			Logarithms.
		T'	0.89067
q	0.00030		
$t'-t$	−1.55	T'^2	1.78134
$(t'-t)q$	−0.00046	$1+\frac{h}{f}$	0.00016
$1-(t'-t)q$	1.00046	$1-(t'-t)q$	0.00020
		Induction.	0.00020
		T^2	1.78190
$mH=\frac{\pi^2 M}{T^2}$		(ar. co.) T^2	8.21810
		π^2	0.99430
		M	0.09715
		mH	9.30955
$m=0.1824$		m	9.26107
$H=1.118$		H	0.04848

* Observations of deflections: November 21, $7^h\ 43^m$ p. m., Göttingen time. Temperature, $t=-20.75°$ Fahr.

	Logarithms.
$\frac{{}^*m}{H}$	9.21259
mH	9.30955
m^2	8.52214
m	9.26107

Record of oscillations and computation of horizontal force—Continued.

[December 20, 1881. Magnet L_{18} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.
	h. m. s.	°			m. s.
0	2 56 40.0	−25.5	11.0	44.0	
8	57 43.0				
16	58 44.0				
24	59 46.0				
32	3 00 49.0				
40	01 51.0	−22.5	21.0	38.0	
80	07 15.0				10 35.0
88	08 17.0				34.0
96	09 19.0				35.0
104	10 21.0				35.0
112	11 22.5				33.5
120	12 24.5	−21.0	27.0	41.5	33.5
	Means	−23.0			10 34.33

Computation.

Observed time of 80 oscillations	=	634.33 s.
Time of one oscillation	=	7.9291
Correction for rate	= −	0.0218
T'	=	7.9073

			Logarithms.
		T'	0.89803
$t'-t$ (q)	0.00030 / +2.0	T'^2	1.79605
$(t'-t)q$	+0.00060	$1+\frac{h}{f}$	0.00029
$1-(t'-t)q$	0.99940	$1-(t'-t)q$	9.99974
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.79628
		(ar. co.) T^2	8.20372
		π^2	0.99430
		M	0.09712
		mH	9.29514
$m=0.1797$		m	9.25464
$H=1.0977$		H	0.04050

*Observations of deflections: December 20, 6^h 32^m p. m., Göttingen time. Temperature, $t=-25.0°$ Fahr.

	Logarithms.
$\frac{*m}{H}$	9.21413
mH	9.29514
m^2	8.50927
m	9.25464

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.	Value of one scale-division = 2.737′.	Logarithms.
				$v'=3.6'$	
				$5400'+v'$	3.73268
				5400 (ar. co.)	6.26761
				$1+\frac{h}{f}$	0.00029
Mean $v=1.30$					

[February 21, 1882. Magnet L_{18} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.
	h. m. s.	°			m. s.
0	5 55 12.5	+32.5	21.1	38.1	
8	56 14.9				
16	57 17.0				
24	58 19.5				
32	59 21.4				
40	6 00 23.6	33.2	25.8	39.0	
80	05 36.4				10 23.9
88	06 38.5				23.6
96	07 40.9				23.9
104	08 43.4				23.9
112	09 45.7				24.3
120	10 48.1	33.8	25.9	35.8	24.5
	Means	33.2			10 24.02

Computation.

Observed time of 80 oscillations	=	624.02 s.
Time of one oscillation	=	7.8002
Correction for rate	= −	0.0214
T'	=	7.7788

			Logarithms.
		T'	0.89091
$t'-t$ (q)	0.00030 / +2.7	T'^2	1.78182
$(t'-t)q$	+0.00081	$1+\frac{h}{f}$	0.00026
$1-(t'-t)q$	0.99919	$1-(t'-t)q$	9.99965
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.78193
		(ar. co.) T^2	8.21807
		π^2	0.99430
		M	0.09745
		mH	9.30982
$m=0.1832$		m	9.26296
$H=1.114$		H	0.04686

*Observations of deflections: February 21, 7^h 26^m p. m., Göttingen time. Temperature, $t=+30.5°$ Fahr.

	Logarithms.
$\frac{*m}{H}$	9.21610
mH	9.30982
m^2	8.52592
m	9.26296

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.	Value of one scale-division = 2.737′.	Logarithms.
				$v'=3.2'$	
				$5400'+v'$	3.73265
				5400 (ar. co.)	6.26761
				$1+\frac{h}{f}$	0.00026
Mean $v=1.16$					

Record of oscillations and computation of horizontal force—Continued.

[February 22, 1882. Magnet L_{18} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.	
	h.	*m.*	*s.*	°			*m.*	*s.*
0	5	44	00.9	+37.0	15.1	34.9		
8		45	03.4					
16		46	05.8					
24		47	08.1					
32		48	10.6					
40		49	12.6	38.4	18.5	32.1		
80		54	25.7				10	24.8
88		55	29.5					26.1
96		56	32.0					26.2
104		57	35.0					26.9
112		58	36.5					25.9
120		59	39.0	40.0	18.4	25.2		26.4
	Means			38.5			10	26.05

Computation.

		s.
Observed time of 80 oscillations	=	626.05
Time of one oscillation	=	7.8256
Correction for rate	= −	0.0215
T'	=	7.8041

			Logarithms.
q	0.00030	T'	0.89232
$t'-t$	+1.55	T'^2	1.78464
$(t'-t)q$	+0.00046	$1+\frac{h}{f}$	0.00033
$1-(t'-t)q$	0.99954	$1-(t'-t)q$	9.99980
		Induction.	0.00010
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.78497
		(ar. co.) T^2	8.21503
		π^2	0.99430
		M	0.09749
		mH	9.30682
$m=0.1816$		m	9.25916
$H=1.116$		H	0.04766

Coefficient of torsion.					Value of one scale-division $=2.737'$.	Logarithms.
Tors. circle.	Scale.		Mean.	Differences.		
					$v'=4.0'$	
					$5400'+v'$	3.73272
					5400 (ar. co.)	6.26761
					$1+\frac{h}{f}$	0.00033
Mean $v=1.45$						

* Observations of deflections: February 22, 7^h 26^m p. m., Göttingen time. Temperature, $t=+36.95°$ Fahr.

	Logarithms.
* m	9.21149
H	
mH	9.30682
m^2	8.51831
m	9.25916

[February 23, 1882. Magnet L_{18} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.	
	h.	*m.*	*s.*	°			*m.*	*s.*
0	6	50	28.5	+15.0	9.1	28.0		
8		51	30.7					
16		52	32.5					
24		53	34.7					
32		54	36.5					
40		55	38.5	16.6	15.0	28.8		
80	7	00	48.5				10	20.0
88		01	50.7					20.0
96		02	53.0					20.5
104		03	55.5					20.8
112		04	57.3					20.8
120		05	59.5	20.2	25.9	34.1		21.0
	Means			+17.3			10	20.52

Computation.

		s.
Observed time of 80 oscillations	=	620.52
Time of one oscillation	=	7.7565
Correction for rate	= −	0.0213
T'	=	7.7352

			Logarithms.
q	0.00030	T'	0.88847
$t'-t$	+13.8	T'^2	1.77694
$(t'-t)q$	+ 0.00414	$1+\frac{h}{f}$	0.00096
$1-(t'-t)q$	0.99586	$1-(t'-t)q$	9.99820
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.77630
		(ar. co.) T^2	8.22370
		π^2	0.99430
		M	0.09730
		mH	9.31530
$m=0.1838$		m	9.26443
$H=1.124$		H	0.05087

Coefficient of torsion.					Value of one scale-division $=2.737'$.	Logarithms.
Tors. circle.	Scale.		Mean.	Differences.		
					$v'=11.9'$	
					$5400'+v'$	3.73335
					5400 (ar. co.)	6.26761
					$1+\frac{h}{f}$	0.00096
Mean $v=4.36$						

* Observations of deflections: February 23, 8^h 22^m p. m., Göttingen time. Temperature, $t=+3.5°$ Fahr.

	Logarithms.
* m	9.21356
H	
mH	9.31530
m^2	8.52886
m	9.26443

Record of oscillations and computation of horizontal force—Continued.

[March 16, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.		Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.	
		h.	*m.*	*s.*	°			*m.*	*s.*
Division 16 observed.	0	10	18	52.0	+21.8	9.0	24.2		
	8		19	54.9					
	16		20	58.5					
	24		22	00.5					
	32		23	02.5					
	40		24	04.5	24.2	15.9	29.9		
Division 23 observed.	80		29	23.0				10	31.0
	88		30	25.7					30.8
	96		31	29.0					30.5
	104		32	31.9					31.4
	112		33	35.6					33.1
	120		34	39.5	26.5	17.0	25.0		[1](35.0)
		Means			+24.2			10	31.36

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.

Mean v = 2.48

Value of one scale-division = 2.737′.	Logarithms.
$v' = 6.8'$	
$5400' + v'$	3.73294
5400 (ar. co.)	6.26761
$1 + \frac{h}{f}$	0.00055

Computation.

		s.
Observed time of 80 oscillations	=	631.36
Time of one oscillation	=	7.8920
Correction for rate	= −	0.0217
T'	=	7.8703

			Logarithms.
q	0.00030	T'	0.89599
$t' - t$	+1.9	T'^2	1.79198
$(t' - t)\,q$	+0.00057	$1 + \frac{h}{f}$	0.00055
$1 - (t' - t)\,q$	0.99943	$1 - (t' - t)\,q$	9.99975
		Induction.	0.00020
$mH = \frac{\pi^2 M}{T^2}$		T^2	1.79248
		(ar. co.) T^2	8.20752
		π^2	0.99430
		M	0.09740
		mH	9.29922
$m = 0.1821$		m	9.26026
$H = 1.094$		H	0.03896

* Observations of deflections: March 16, 10^h 28^m a. m., Göttingen time. Temperature, $t = +22.3°$ Fahr.

	Logarithms.
$^*\frac{m}{H}$	9.22131
mH	9.29922
m^2	8.52053
m	9.26026

[1] Excluded.

[March 17, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.	
	h.	*m.*	*s.*	°			*m.*	*s.*
0	5	58	15.1	41.0	14.0	39.9		
8		59	17.8					
16	6	00	20.0					
24		01	23.0					
32		02	25.5					
40		03	27.9	41.0	17.8	36.2		
80		08	40.3		22.0	35.1	10	25.2
88		09	42.1					24.3
96		10	44.2					24.2
104		11	46.5					23.5
112		12	49.0					23.5
120		13	51.5	41.0	26.0	38.2		23.6
	Means			41.0			10	24.05

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.

Mean v = 1.75

Value of one scale-division = 2.737′.	Logarithms.
$v' = 4.8'$	
$5400' + v'$	3.73278
5400 (ar. co.)	6.26761
$1 + \frac{h}{f}$	0.00039

Computation.

		s.
Observed time of 80 oscillations	=	624.05
Time of one oscillation	=	7.8006
Correction for rate	= −	0.0214
T'	=	7.7792

			Logarithms.
q	0.00030	T'	0.89093
$t' - t$	+2.0	T'^2	1.78186
$(t' - t)\,q$	+0.00060	$1 + \frac{h}{f}$	0.00039
$1 - (t' - t)\,q$	0.99940	$1 - (t' - t)\,q$	9.99974
		Induction.	0.00020
$mH = \frac{\pi^2 M}{T^2}$		T^2	1.78219
		(ar. co.) T^2	8.21781
		π^2	0.99430
		M	0.09751
		mH	9.30962
$m = 0.1825$		m	9.26132
$H = 1.118$		H	0.04830

* Observations of deflections: March 17, 6^h 22^m a. m., Göttingen time. Temperature, $t = +39.0°$ Fahr.

	Logarithms.
$^*\frac{m}{H}$	9.21302
mH	9.30962
m^2	8.52264
m	9.26132

Record of oscillations and computation of horizontal force—Continued.

[March 18, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining $3^m\ 59^s$ on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.
	h. m. s.	°			s. m. s.
0	6 02 26.5	+37.0	9.1	32.5	
8	03 28.7				
16	04 31.2				
24	05 33.9				
32	06 36.5				
40	07 38.8	36.0	15.2	36.0	
78	12 37.0				+15.6 } 10 26.1
86	13 39.0				+15.6 } 25.9
94	14 41.5				+15.6 } 25.9
104	15 59.0				25.1
112	17 01.0				24.5
120	18 02.5	35.9	22.0	33.0	23.7
	Means	36.3			10 25.20

Computation.

		s.
Observed time of 80 oscillations	=	625.20
Time of one oscillation	=	7.8150
Correction for rate	= −	0.0214
T'	=	7.7936

			Logarithms.
q	0.00030	T'	0.89174
$t'-t$	+5.8	T'^2	1.78347
$(t'-t)q$	+0.00174	$1+\frac{h}{f}$	0.00056
$1-(t'-t)q$	0.99826	$1-(t'-t)q$	9.99924
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.78347
		(ar. co.) T^2	8.21653
		π^2	0.99430
		M	0.09745
		mH	9.30828
$m=0.1820$		m	9.25999
$H=1.118$		H	0.04829

* Observations of deflections: March 18, $6^h\ 25^m$ a. m., Göttingen time. Temperature, $t=+30.5°$ Fahr.

	Logarithms.
$^*m/H$	9.21170
mH	9.30828
m^2	8.51998
m	9.25999

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.
Mean $v=2.51$				

Value of one scale-division $=2.737'$.	Logarithms.
$v'=6.9'$	
$5400'+v'$	3.73295
5400 (ar. co.)	6.26761
$1+\frac{h}{f}$	0.00056

[April 21, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining $3^m\ 59^s$ on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.
	h. m. s.	°			m. s.
0	5 32 40.5	+ 2.0	22.8	30.1	
8	33 42.9				
16	34 45.0				
25	35 57.3				
33	37 00.1				
41	38 03.1	3.2	28.1	38.7	
80	43 03.0				10 22.5
88	44 05.5				22.6
96	45 09.5				24.5
105	46 22.5				25.2
113	47 25.4				25.3
121	48 28.0	4.3	27.3	42.6	24.9
	Means	+ 3.2			10 24.17

Computation.

		s.
Observed time of 80 oscillations	=	624.17
Time of one oscillation	=	7.8021
Correction for rate	= −	0.0214
T'	=	7.7807

			Logarithms.
q	0.00030	T'	0.89102
$t'-t$	+2.55	T'^2	1.78204
$(t'-t)q$	+0.000765	$1+\frac{h}{f}$	0.00011
$1-(t'-t)q$	0.99924	$1-(t'-t)q$	9.99967
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.78202
		(ar. co.) T^2	8.21798
		π^2	0.99430
		M	0.09727
		mH	9.30955
$m=0.1831$		m	9.26280
$H=1.114$		H	0.04675

* Observations of deflections: April 21, $3^h\ 16^m$ p. m., Göttingen time. Temperature, $t=+0.65°$ Fahr.

	Logarithms.
$^*m/H$	9.21604
mH	9.30955
m^2	8.52559
m	9.26280

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.
Mean $v=0.48$				

Value of one scale-division $=2.737'$.	Logarithms.
$v'=1.3'$	
$5400'+v'$	3.73250
5400 (ar. co.)	6.26761
$1+\frac{h}{f}$	0.00011

Record of oscillations and computation of horizontal force—Continued.

[May 20, 1882. Magnet L_{12} suspended. Mean-time chronometer No. 100:6; daily rate losing 0.6s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 80 oscillations.
	h. m. s.	°			m. s.
0	3 24 22.8	37.2	14.3	29.1	
8	25 24.6				
16	26 25.4				
25	27 36.1				
33	28 37.4				
41	29 39.4	37.0	15.0	24.0	
80	34 44.4				10 21.6
88	35 44.9				20.3
96	36 46.6				21.2
105	37 55.0				18.9
113	38 56.4				19.0
121	39 59.2	37.0	11.8	19.0	19.8
Means		37.1			10 20.13

Computation.

Observed time of 80 oscillations = 620.13 s.
Time of one oscillation = 7.7515
Correction for rate = + 0.0001
$T' =$ 7.7516

			Logarithms.
q	0.00030	T'	0.88939
$t'-t$	+0.4	T'^2	1.77878
$(t'-t)q$	+0.00012	$1+\frac{h}{f}$	0.00056
$1-(t'-t)q$	0.99988	$1-(t'-t)q$	9.99995
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.77949
		(ar. co.) T^2	8.22051
		π^2	0.99430
		M	0.09749
$m=0.1820$		mH	9.31230
		m	9.25974
$H=1.129$		H	0.05256

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.	Value of one scale-division $=2.737'$.	Logarithms.
				$v'=6.9'$	
				$5400'+v'$	3.73295
				5400 (ar. co.)	6.26761
				$1+\frac{h}{f}$	0.00056
Mean $v=2.52$					

* Observations of deflections: May 20, 8h 36m p. m., Göttingen time.
Temperature, $t=+36.3°$ Fahr.
+37.1
Mean 36.7

		Logarithms.
* $\frac{m}{H}$	Mean	9.20718
mH		9.31230
m^2		8.51948
m		9.25974

[May 21, 1882.—Oscillations disturbed by rapid changes in declination.]

[June 20, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3m 59s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.
	h. m. s.	°			m. s.
0	2 25 20.5	49.2	17.2	43.0	
4	25 51.4				
8	26 22.1				
13	27 01.5				
17	27 32.7				
21	28 03.9	49.9	25.0	45.8	
40	30 31.8				5 11.3
44	31 03.0				11.6
48	31 34.1				12.0
53	32 13.0				11.5
57	32 44.3				11.6
61	33 15.5	49.0	28.1	43.6	11.6
Means		49.4			5 11.60

Computation.

Observed time of 40 oscillations = 311.60 s.
Time of one oscillation = 7.7900
Correction for rate = − 0.0214
$T' =$ 7.7686

			Logarithms.
q	0.00030	T'	0.89034
$t'-t$	+1.02	T'^2	1.78068
$(t'-t)q$	+0.00031	$1+\frac{h}{f}$	0.00032
$1-(t'-t)q$	0.99969	$1-(t'-t)q$	9.99987
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.78107
		(ar. co.) T^2	8.21893
		π^2	0.99430
		M	0.09755
$m=0.1824$		mH	9.31078
		m	9.26113
$H=1.121$		H	0.04965

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.	Value of one scale-division $=2.737'$.	Logarithms.
				$v'=3.9'$	
				$5400'+v'$	3.73271
				5400 (ar. co.)	6.26761
				$1+\frac{h}{f}$	0.00032
Mean $v=1.42$					

* Observations of deflections: June 20, 8h 25m p. m., Göttingen time.
Temperature, $t=+47.1°$ Fahr.
+49.65
Mean 48.38

		Logarithms.
* $\frac{m}{H}$	Mean	9.21148
mH		9.31078
m^2		8.52226
m		9.26113

Record of oscillations and computation of horizontal force—Continued.

[June 21, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.	
	h.	*m.*	*s.*	°			*m.*	*s.*
0	2	34	11.0	58.6	13.8	36.9		
4		34	42.2					
8		35	13.6					
13		35	52.3					
17		36	23.1					
21		36	53.5	57.0	9.2	26.1		
40		39	24.0				5	13.0
44		39	55.6					13.4
48		40	27.1					13.5
53		41	04.5					12.2
57		41	35.8					12.7
61		42	06.9	54.5	4.9	18.1		13.4
	Means			56.7			5	13.03

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.	Value of one scale-division $= 2.737'$.	Logarithms.
				$v' = 4.0'$	
				$5400' + v'$	3.73272
				5400 (ar. co.)	6.26761
				$1 + \frac{h}{f}$	0.00033
Mean $v = 1.48$					

Computation.

	s.
Observed time of 40 oscillations =	313.03
Time of one oscillation =	7.8258
Correction for rate = −	0.0215
$T' =$	7.8043

			Logarithms.
q	0.00030	T'	0.89233
$t' - t$	−0.1	T'^2	1.78466
$(t' - t)\,q$	−0.00003	$1 + \frac{h}{f}$	0.00033
$1 - (t' - t)\,q$	1.00003	$1 - (t' - t)\,q$	0.00001
		Induction.	0.00020
$mH = \frac{\pi^2 M}{T^2}$		T^2	1.78520
		(ar. co.) T^2	8.21480
		π^2	0.99430
		M	0.09760
		mH	9.30670
$m = 0.1808$		m	9.25730
$H = 1.120$		H	0.04940

* Observations of deflections: June 21, 8^h 31^m p. m., Göttingen time.
Temperature, $t = 55.5°$ Fahr.
58.1
Mean 56.8

		Logarithms.
* $\frac{m}{H}$	Mean	9.20791
mH		9.30670
m^2		8.51461
m		9.25730

[June 22, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.	
	h.	*m.*	*s.*	°			*m.*	*s.*
0	3	03	20.5	62.8	13.6	30.9		
4		03	51.6					
8		04	22.7					
13		05	02.3					
17		05	33.2					
21		06	04.0	62.0	13.2	28.3		
40		08	34.2				5	13.7
44		09	04.5					12.9
48		09	35.9					13.2
53		10	14.7					12.4
57		10	46.2					13.0
61		11	17.8	61.0	18.1	27.4		13.8
	Means			61.9			5	13.17

Coefficient of torsion.

Tors. circle.	Scale.	Mean.	Differences.	Value of one scale-division $= 2.737'$.	Logarithms.
				$v' = 1.8'$	
				$5400' + v'$	3.73254
				5400 (ar. co.)	6.26761
				$1 + \frac{h}{f}$	0.00015
Mean $v = 0.66$					

Computation.

	s.
Observed time of 40 oscillations =	313.17
Time of one oscillation =	7.8292
Correction for rate = −	0.0215
$T' =$	7.8077

			Logarithms.
q	0.00030	T'	0.89252
$t' - t$	+3.25	T'^2	1.78504
$(t' - t)\,q$	+0.00098	$1 + \frac{h}{f}$	0.00015
$1 - (t' - t)\,q$	0.99902	$1 - (t' - t)\,q$	9.99957
			0.00020
$mH = \frac{\pi^2 M}{T^2}$		T^2	1.78496
		(ar. co.) T^2	8.21504
		π^2	0.99430
		M	0.09761
		mH	9.30695
$m = 0.1802$		m	9.25570
$H = 1.125$		H	0.0512[illegible]

* Observations of deflections: June 22, 9^h 14^m p. m., Göttingen time.
Temperature, $t = 58.65$ Fahr.

	Logarithms.
* $\frac{m}{H}$	9.20445
mH	9.30695
m^2	8.51140
m	9.25570

Record of oscillations and computation of horizontal force—Continued.

[September 2, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 13 oscillations.
	h. m. s.	°			m. s.
0	7 05 37.3	52.2	12.2	31.9	
4	06 09.6				
8	06 40.9				1 41.4
13	07 18.7				40.3
17	07 49.9				39.8
21	08 20.7	51.3	8.8	25.4	
		Magnet swung off the scale.			
Means		51.8			1 40.50

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.	Value of one scale-division $= 2.737'$.	Logarithms.

Computation.

	s.
Observed time of 13 oscillations =	100.50
Time of one oscillation =	7.7308
Correction for rate = −	0.0213
$T' =$	7.7095

			Logarithms.
		T'	0.88703
q	0.00030		
$t'-t$	+1.15	T'^2	1.77406
$(t'-t)\,q$	+0.00034	$1+\frac{h}{f}$	0.00043
$1-(t'-t)\,q$	0.99966	$1-(t'-t)\,q$	9.99985
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.77454
		(ar. co.) T^2	8.22546
		π^2	0.99430
		M	0.09760
		mH	9.31736
$m=0.1807$		m	9.25686
$H=1.150$		H	0.06050

* Observations of deflections: September 2, 8^h 20^m p. m., Göttingen time. Temperature, $t=50.65°$ Fahr.

	Logarithms.
* $\frac{m}{H}$	9.19635
mH	9.31736
m^2	8.51371
m	9.25686

[September 18, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.
	h. m. s.	°			m. s.
0	8 25 55.0	28.6	23.0	41.9	
4	26 26.7				
8	26 57.6				
13	27 35.5				
17	28 06.5				
21	28 37.7	28.1	26.2	41.2	
40	31 06.9				5 11.9
44	31 37.6				10.9
48	32 09.0				11.4
53	32 49.4				13.9
57	33 20.6				14.1
61	33 52.1	27.9	31.4	43.7	14.4
Means		28.2			5 12.77

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.	Value of one scale-division $= 2.737'$.	Logarithms.
					$v'=5.3'$	
					$5400'+v'$	3.73282
					5400 (ar. co.)	6.26761
					$1+\frac{h}{f}$	0.00043
	Mean v' = 1.93					

Computation.

	s.
Observed time of 40 oscillations =	312.77
Time of one oscillation =	7.8192
Correction for rate = −	0.0215
$T' =$	7.7977

			Logarithms.
		T'	0.89197
q	0.00030		
$t'-t$	−1.1	T'^2	1.78394
$(t'-t)\,q$	−0.00033	$1+\frac{h}{f}$	0.00043
$1-(t'-t)\,q$	1.00033	$1-(t'-t)\,q$	0.00014
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.78471
		(ar. co.) T^2	8.21529
		π^2	0.99430
		M	0.09745
		mH	9.30704
$m=0.1841$		m	9.26512
$H=1.101$		H	0.04192

* Observations of deflections: September 18, 8^h 25^m p. m., Göttingen time. Temperature, $t=+29.3°$ Fahr.

	Logarithms.
* $\frac{m}{H}$	9.22319
mH	9.30704
m^2	8.53023
m	9.26512

Record of oscillations and computation of horizontal force—Continued.

[October 17, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.
	h. m. s.	°			m. s.
0	10 25 14.7	+28.4	11.8	33.9	
4	25 45.9				
8	26 16.5				
13	26 56.2				
17	27 27.5				
21	27 58.5	28.6	18.5	36.1	
40	30 26.1				5 11.4
44	30 57.8				11.9
48	31 29.0				12.5
53	32 05.5				09.3
57	32 36.8				09.3
61	33 08.0	28.6	17.0	28.2	09.5
Means		28.5			5 10.65

Computation.

		s.
Observed time of 40 oscillations	=	310.65
Time of one oscillation	=	7.7662
Correction for rate	= −	0.0214
T'	=	7.7448

			Logarithms.
		T'	0.88901
q	0.00030		
$t'-t$	+5.58	T'^2	1.77802
$(t'-t)\,q$	+0.00167	$1+\frac{h}{f}$	0.00053
$1-(t'-t)\,q$	0.99833	$1-(t'-t)\,q$	9.99927
		Induction.	0.00020
		T^2	1.77802
$mH=\frac{\pi^2 M}{T^2}$		(ar. co.) T^2	8.22198
		π^2	0.99430
		M	0.09741
		mH	9.31369
$m=0.1820$		m	9.26000
$H=1.132$		H	0.05369

Coefficient of torsion.				Value of one scale-division $=2.737'$.	Logarithms.
Tors. circle.	Scale.	Mean.	Differences.		
				$v'=6\ 5'$	
				$5400'+v'$	3.73292
				5400 (ar. co.)	6.26761
				$1+\frac{h}{f}$	0.00053
		Mean $v=2.39$			

*Observations of deflections: October 17, 8^h 34^m p. m., Göttingen time. Temperature, $t=+18.7°$ Fahr.
+27.15

Mean 22.92

		Logarithms.
$\frac{{}^*m}{H}$	Mean	9.20630
mH		9.31369
m^2		8.51999
m		9.26000

[November 2, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.
	h. m. s.	°			m. s.
0	11 26 18.6	+34.3	16.6	39.8	
4	26 49.4				
8	27 20.5				
13	28 00.2				
17	28 31.1				
21	29 02.2	34.8	16.8	[illegible]6.0	
40	31 28.7				5 10.1
44	31 59.5				10.1
48	32 30.5				10.0
53	33 11.8				11.6
57	33 42.4				11.3
61	34 13.2	35.9	17.6	31.9	11.0
Means		35.0			5 10.68

Computation.

		s.
Observed time of 40 oscillations	=	310.68
Time of one oscillation	=	7.7670
Correction for rate	= −	0.0214
T'	=	7.7456

			Logarithms.
		T'	0.88906
q	0.00030		
$t'-t$	+0.85	T'^2	1.77811
$(t'-t)\,q$	+0.00025	$1+\frac{h}{f}$	0.00067
$1-(t'-t)\,q$	0.99975	$1-(t'-t)\,q$	9.99989
		Induction.	0.00020
		T^2	1.77887
$mH=\frac{\pi^2 M}{T^2}$		(ar. co.) T^2	8.22113
		π^2	0.99430
		M	0.09747
		mH	9.31290
$m=0.1820$		m	9.26008
$H=1.129$		H	0.05282

Coefficient of torsion.				Value of one scale-division $=2.737'$.	Logarithms.
Tors. circle.	Scale.	Mean.	Differences.		
				$v'=$ '	
				$5400'+v'$	
				5400 (ar. co.)	6.26761
				$1+\frac{h}{f}$	
		Mean $v=$			

*Observations of deflections: November 2, 8^h 28^m p. m., Göttingen time. Temperature, $t=32.55°$ Fahr.
35.75

Mean 34.15

		Logarithms.
$\frac{{}^*m}{H}$	Mean	9.20726
mH		9.31290
m^2		8.52016
m		9.26008

Record of oscillations and computation of horizontal force—Continued.

[December 5, 1882. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining $3^m\ 59^s$ on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.
	h. m. s.	°			m. s.
0	8 36 10.5	+50.3	28.0	45.2	
4	36 42 0				
8	37 14.0				
13	37 51.5				
17	38 22.3				
21	38 54.4	51.8	23.0	37.2	
40	41 25.4				5 14.9
44	41 57.2				15.2
48	42 28.6				14.6
53	43 06.3				14.8
57	43 38.6				16.3
61	44 10.7	52.7	23.8	34.1	16.3
	Means	51.6			5 15.35

Computation.

		s.
Observed time of 40 oscillations	=	315.35
Time of one oscillation	=	7.8838
Correction for rate	= −	0.0216
T'	=	7.8622

			Logarithms.
q	0.00030	T'	0.89554
$t'-t$	+13.55	T'^2	1.79108
$(t'-t)q$	+ 0.00406	$1+\frac{h}{f}$	0.00082
$1-(t'-t)q$	0.99594	$1-(t'-t)q$	9.99823
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.79033
		(ar. co.) T^2	8.20967
		π^2	0.99430
		M	0.09750
		mH	9.30147
$m=0.1800$		m	9.25497
$H=1.113$		H	0.04650

* Observations of deflections: December 5, $3^h\ 22^m$ p. m., Göttingen time. Temperature, $t=38.05°$ Fahr.

	Logarithms.
$\frac{{}^*m}{H}$	9.20847
mH	9.30147
m^2	8.50994
m	9.25497

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.	Value of one scale-division = 2.737′.	Logarithms.
					$v'=10.2'$	
					$5400'+v'$	3.73321
					5400 (ar. co.)	6.26761
					$1+\frac{h}{f}$	0.00082
Mean $v=3.74$						

[April 2, 1883. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining $3^m\ 59^s$ on mean time.]

Number of oscillations.	Chronometer time.	Temp. t' (Fahr.)	Extreme scale readings.		Time of 46+6 oscillations.
	h. m. s.	°			m. s.
0	9 27 38.2	+41.9	10.9	42.0	
4	28 09.8				
8	28 41.1				
13	29 21.0				
17	29 52.7				
21	30 24.2	41.5	15.1	39.7	
46	34 26.1				6 47.9
50	34 57.3				47.5
54	35 28.2				47.1
59	36 11.5				50.5
63	36 43.5				50.8
67	37 15.6	41.1	24.9	40.0	51.4
	Means	41.5			6 49.20

Computation.

		s.
Observed time of 52 oscillations	=	409.20
Time of one oscillation	=	7.8692
Correction for rate	= −	0.0216
T'	=	7.8476

			Logarithms.
q	0.00030	T'	0.89474
$t'-t$	−3.35	T'^2	1.78948
$(t'-t)q$	−0.00100	$1+\frac{h}{f}$	0.00050
$1-(t'-t)q$	1.00100	$1-(t'-t)q$	0.00043
		Induction.	0.00020
$mH=\frac{\pi^2 M}{T^2}$		T^2	1.79061
		(ar. co.) T^2	8.20939
		π^2	0.99430
		M	0.09754
		mH	9.30123
$m=0.1794$		m	9.25379
$H=1.115$		H	0.04744

* Observations of deflections: April 2, $1^h\ 20^m$ a. m., Göttingen time. Temperature $t=+44.85°$ Fahr.

	Logarithms.
$\frac{{}^*m}{H}$	9.20636
mH	9.30123
m^2	8.50759
m	9.25379

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.	Value of one scale-division = 2.737′.	Logarithms.
					$v'=6.2'$	
					$5400'+v'$	3.73289
					5400 (ar. co.)	6.26761
					$1+\frac{h}{f}$	0.00050
Mean $v=2.26$						

Record of oscillations and computation of horizontal force—Continued.

[July 5, 1883. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59^s on mean time.]

Number of oscillations.	Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.	
	h.	*m.*	*s.*	°			*m.*	*s.*
0	10	40	19.3	+50.3	8.7	45.4		
4		40	50.4					
8		41	21.4					
13		42	00.2					
17		42	31.3					
21		43	02.4	50.8	9.0	39.1		
40		45	32.0		9.9	37.1	5	12.7
44		46	03.2					12.8
48		46	34.7					13.3
53		47	13.0					12.8
57		47	44.2					12.9
61		48	15.4	51.4	11.3	34.0		13.0
Means				50.8			5	12.92

Computation.

		s.
Observed time of 40 oscillations	=	312.92
Time of one oscillation	=	7.8230
Correction for rate	= −	0.0215
T'	=	7.8015

			Logarithms.
		T'	0.89218
q	0.00030		
$t'-t$	−0.35	T'^2	1.78436
$(t'-t)q$	−0.00010	$1+\frac{h}{f}$	0.00044
$1-(t'-t)q$	1.00010	$1-(t'-t)q$	0.00004
		Induction.	0.00020
		T^2	1.78504
$mH=\frac{\pi^2 M}{T^2}$		(ar. co.) T^2	8.21496
		π^2	0.99430
		M	0.09758
		mH	9.30684
$m=0.1800$		m	9.25509
$H=1.127$		H	0.05175

Coefficient of torsion.

Tors. circle.	Scale.		Mean.	Differences.

Mean $v=1.98$

Value of one scale-division $=2.737'$.	Logarithms.
$v'=5.4'$	
$5400'+v'$	3.73283
5400 (ar. co.)	6.26761
$1+\frac{h}{f}$	0.00044

*Observations of deflections: July 5, 8^h 28^m a. m, Göttingen time. Temperature, $t=51.15°$ Fahr.

	Logarithms.
*m	9.20334
H	
mH	9.30684
m^2	8.51018
m	9.25509

[August 8, 1883. Magnet L_{12} suspended. Sidereal chronometer No. 198; daily rate gaining 3^m 59.0^s on mean time.]

Number of oscillations.	Chronometer time.			Temp. t' (Fahr.)	Extreme scale readings.		Time of 40 oscillations.	
	h.	*m.*	*s.*	°			*m.*	*s.*
0	12	09	44.3	44.3	14.7	37.9		
4		10	15.9					
8		10	47.5					
13		11	27.5					
17		11	59.4					
21		12	30.9	45.7	16.1	34.6		
40	12	15	02.2				5	17.9
44		15	34.0					18.1
48		16	05.9					18.4
53		16	44.1					16.6
57		17	15.5					16.1
61		17	47.1	45.0	15.1	29.1		16.2
Means				45.0			5	17.22

Computation.

		s.
Observed time of 40 oscillations	=	317.22
Time of one oscillation	=	7.9305
Correction for rate	= −	0.0218
T'	=	7.9087

			Logarithms.
		T'	0.89811
q	0.00030		
$t'-t$	−0.4°	T'^2	1.79621
$(t'-t)q$	−0.00012	$1+\frac{h}{f}$	0.00045
$1-(t'-t)q$	1.00012	$1-(t'-t)q$	0.00005
		Induction.	0.00020
		T^2	1.79691
$mH=\frac{\pi^2 M}{T^2}$		(ar. co.) T^2	8.20309
		π^2	0.99430
		M	0.09754
		mH	9.29493
$m=0.1785$		m	9.25152
$H=1.105$		H	0.04341

Coefficient of torsion.

Tors. circle.	Scale.		Mean	Differences.
°				
30	16.2	27.8	22.0	1.5
120	17.9	29.1	23.5	3.5
300	10.8	29.3	20.0	3.1
30	13.1	33.0	23.1	

Mean $v=2.0$

Value of one scale-division $=2.737'$.	Logarithms.
$v'=5.5'$	
$5400'+v'$	3.73284
5400 (ar. co.)	6.26761
$1+\frac{h}{f}$	0.00045

*Observations of deflections: August 8, 8^h 56^m a. m., Göttingen time. Temperature, $t=45.4°$ Fahr.

	Logarithms.
*m	9.20811
H	
mH	9.29493
m^2	8.50304
m	9.25152

Recapitulation of results for the horizontal components of the magnetic force at Fort Conger, Grinnell Land, between September, 1881, and August, 1883.

[Deduced from observations of deflections and oscillations. Epoch, 1882.43]

Date.	Temperature.	Magnetic moment of magnet.		H, or horizontal force.			Remarks.
		In British units.	In C. G. S. units.	In British units.	In Gaussian units.	In C. G. S. units.	
1881.	°						
16	6.7 C.	0.184	0.00849	1.122	0.5173	0.05173	
8	6.9	0.187	863	1.140	.5256	.05256	Maximum.
Nov. 20	28.5	0.186	856	1.125	.5187	.05187	
21	29.3	0.182	841	1.118	.5155	.05155	
Dec. 20	−31.7	0.180	829	1.097	.5058	.05058	
1882.							
Feb. 21	− 0.8	0.183	845	1.114	.5136	.05136	
22	+ 2.7	0.182	837	1.116	.5146	.05146	
23	−15.8	0.184	847	1.124	.5183	.05183	
Mar. 16	− 5.4	0.182	840	1.094	.5044	.05044	Minimum.
17	+ 3.9	0.182	841	1.118	.5155	.05155	
18	0.8	0.182	839	1.118	.5155	.05155	
Apr. 21	−17.4	0.183	844	1.114	.5136	.05136	
May 20	+ 2.6	0.182	839	1.129	.5206	.05206	
June 20	+ 9.1	0.182	841	1.121	.5169	.05169	
21	+13.8	0.181	834	1.120	.5164	.05164	
22	+14.8	0.180	831	1.125	.5187	.05187	
Sept. 2	+10.4	0.181	833	(1.150)			Disturbances.
18	1.5	0.184	849	1.101	.5076	.05076	
Oct. 17	5.1	0.182	839	1.132	.5219	.05219	
Nov. 2	1.2	0.182	839	1.129	.5206	.05206	
Dec. 5	− 3.4	0.180	830	1.113	.5132	.05132	
1883.							
Apr. 2	+ 7.1	0.179	827	1.115	.5141	.05141	
July 5	+10.6	0.180	830	1.127	.5196	.05196	
Aug. 8	+ 7.4	0.178	823	1.105	.5095	.05095	
			Mean	1.118	0.5155	0.05155	

Comparing the mean value $H = 1.118$ British units, or 0.05155 dynes (which value refers to the epoch 1882.4), with the result* obtained at Discovery Bay by the British Arctic Expedition of 1875-'76, we find our value to fall between those resulting from the magnetometer (1.131) and from the dip-needles (1.107). If the value given by the magnetometer is the better of the two, then the horizontal force appears to have diminished between 1876.0 and 1882.4 at an annual rate of 0.00203 British units, or 0.000094 dynes, or about $\frac{1}{554}$ part of the force. Otherwise there is no perceptible change in the force between the two epochs. Lieutenant Greely informs me that his magnetic observatory stood very nearly if not in the identical spot where the English expedition had made observations six years before, *i. e.*, on the shore of Discovery Bay, 197 yards [180^m] from the ship.

The loss of magnetism of L_{12} between 1882.4 and 1886.5 was not very great. For the former epoch the mean value for m equals 0.182 British units at $-2.6°$ C.; for the latter, from two sets of deflections and a number of oscillations at Washington, 0.166 British units at $+33.1°$ C. Reducing these values to the standard temperature $t_0 = +10°$ C. m_0 becomes 0.181 and 0.168, respectively, showing an annual loss of 0.0032 British units, or 0.00015 dynes nearly.

The 23 tabular values of H show considerable variation, probably even within the limit of non-disturbance. The highest value is 0.022 above and the lowest 0.024 (British units) below the average value; these numbers equal, respectively, .00101 and .00111 dynes, or $\frac{1}{51}$ and $\frac{1}{46}$ nearly of the force.

*"On the Results of the Magnetical Observations made by the Officers of the Arctic Expedition, 1875-'76." By Staff-Commander E. W. Creak, R. N. Proceedings of the Royal Society, No. 196, 1879.

(3) *Observations of the magnetic dip and total intensity.*—All dip observations recorded at Fort Conger were made with Needle No. 2 of Dip-circle No. 19. This is a Lloyd needle, $9^{cm.}$ in length, with the usual three perforations at each end, but no use could be made of it as an intensity-needle, though on March 26–29 observations were made of deflections by means of a small weight placed in the outer hole of end B, then having south polarity. These special observations are of no further value.

An hourly series of dip observations was commenced September 25, 1882, and closed on June 1, 1883. Its arrangement was as follows:

Date.	Needle.	Polarity.	Circle.	Face of needle.
1882.				
Sept. 25–30	No. 2	S.	E.	E.
Oct. 1–19	No. 2	S.	E.	E.
Oct. 20–31	No. 2	N.	W.	E.
Nov. 1–30	No. 2	N.	W.	E.
Dec. 1–31	No. 2	N.	W.	E.
1883.				
Jan. 1–31	No. 2	N.	W.	E.
Feb. 1–28	No. 2	N.	W.	E.
March 1–25	No. 2	N.	W.	E.
March 30–31	No. 2	S.	W.	E.
April 1–30	No. 2	S.	W.	E.
May 1–31	No. 2	S.	W.	E.

The reading of the magnetic meridian was determined daily by means of the verticality of the needle when placed in the magnetic prime vertical, and the circle was put in the magnetic meridian accordingly.

During the first two months frequently and later on occasionally the dip was observed with the plane of the circle out of the magnetic meridian, hence the true dip θ has to be deduced by means of the relation:

$$\tan\theta = \tan\theta_\alpha \cos\alpha$$

Where α is the difference in the azimuths of the planes of the circle* and of the magnetic meridian. The hourly values so affected have all been changed to refer to the true dip.

Besides the hourly readings mentioned there were special term-day readings of the dipping-needle, viz, five-minute readings throughout the day on the 1st and 15th of each month, beginning with October 1, 1882, and ending with June 1, 1883. As in the preceding series, here also some of the observations were made with the circle out of the magnetic meridian, and it would appear that this was done in order to avoid the obstruction otherwise present by the vertical supports of the needle which were insufficiently perforated.

The series of dip observations partakes therefore more of the value of differential than of absolute measures, but two reversals of the polarity of the needle and one of the circle having been made, an approximate value of the dip could be given by determining the needed constants for the several corrections.

To find the index error of the graduation I have collected 100 differences of results between circle west and circle east from a number of stations occupied with the instrument before it came into the hands of the Lady Franklin Bay party. These differences comprise an equal number of results with two needles, and for different polarities. The average difference for circle W—circle E was $+19.4' \pm 0.8'$, hence the index correction $i = \left\{ \mp 9.7' \right.$ for dip when circle $\left\{ \begin{matrix} W \\ E \end{matrix} \right.$ only was observed.

To determine the correction arising from want of balance of the needle a series of measurements were made (July 15 and 16, 1886) with the needle mounted in a dip-circle similar to that of No. 19. The effect of a change of face of Needle No. 2, *i. e.*, for face east — face west was as follows: From 52 observations, and for marked end south (or south polarity) $+32'$ $+38'$ $+56'$ $+52'$ $+41'$ $+16'$ $+43'$, mean $+40'$, and from 50 observations for marked end north (or north polarity) $-18'$ $-30'$ $-30'$ $-36'$ $-36'$ $-66'$ $-66'$ $-59'$, mean $-43'$, and the correction b, for want of balance of needle, becomes:

When face E only was observed and for needle	South polarity	$-20'$
	North polarity	$+21'$
When face W only was observed and for needle	South polarity	$+20'$
	North polarity	$-21'$

*The azimuth circle is divided into four quadrants, each graduated from 0° to 90° in the order from left to right.

To determine the corrrection required for want of change of polarity or for non-reversal of the magnetism of the needle 13 reversals were made, with the following effect on the dip: For south — north polarity, difference:

$$\left.\begin{matrix} -26' & -39' & -17' & -48' & -32' & -18' & -17' \\ -30' & -25' & -32' & -39' & -25' & -36' & \text{——} \end{matrix}\right\} \text{Mean } -29.5'$$

hence the correction r, for want of reversal, becomes $\begin{cases} \text{for south polarity only observed} & +15' \\ \text{for north polarity only observed} & -15' \end{cases}$

These several corrections, i, b, r, as well as the reduction to the magnetic meridian, were applied, when needed, before tabulation.

After the observations of September, 1882, had been properly reduced it became evident that the series was defective, particularly in the afternoon hours, showing a steady decline up to 23^h (dip 84° 20′), and after change of observers at 24^h a sudden increase (dip 85° 02′); they were therefore rejected, as also the greater part of the observations for October, 1882, which set also indicated by its irregular readings that some observer had not yet acquired the requisite skill or experience. The regular character of the work commences about October 24, from which date the series is continuous. From the nature of the case individual results may be liable to an uncertainty, estimated at not less $\pm 10'$ or $\pm 15'$. It should also be remarked that at Fort Conger the daily record of the dip was commenced with 0^h and ended with 23^h and not with 1^h and ending with 24^h, as proposed in the schedules of the Vienna Conference; no change was made in the record, as the Fort Conger practice was apparently a better one,* and as it would have involved inconvenience and some inconsistency in certain statements. In the term-day series also the record is followed, beginning with 0^h and 0^m in the daily and hourly records. Respecting the term-day and term-hour readings, which are appended to the hourly series of the dip, and which were treated in the same way as the latter series, it may be well to advise caution in placing too great confidence in their value; see, also, on this point the pertinent prefatory remarks by Lieutenant Greely.

* In order that the first entry should correspond to the *beginning* of the cycle.

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OCTOBER, 1882.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2.)

Hourly values of magnetic dip. 80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50'' = 4^h 18^m 55.3^s$ (or $4^h 58^m 41.5^s$ W. of Göttingen).

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
24	5 05	4 55	4 55	5 21	5 08	5 08	5 08	5 14	5 08	5 05	5 22	5 11	4 53
25	4 59	5 12	5 36	5 47	5 51	5 23	5 23	5 23	5 18	5 18	5 09	5 17	5 12
26	5 00	4 50	4 59	4 53	4 53	5 04	5 04	5 07	5 07	5 07	4 46	4 40	4 51
27	4 56	4 56	5 09	4 56	4 56	4 56	4 56	5 11	5 05	4 48	4 58	4 48	4 42
28	5 14	4 56	4 45	4 53	4 53	4 53	4 53	4 54	5 01	4 44	4 51	4 57	4 53
29	4 40	4 59	5 05	4 59	4 59	5 06	5 06	5 20	4 45	5 07	4 56	5 04	5 00
30	4 51	5 01	5 11	5 01	5 01	5 09	5 21	5 19	5 10	4 57	5 17	4 52	5 10
31	4 57	5 03	4 16	4 58	5 04	5 06	5 16	5 00	4 56	5 06	5 08	5 08	5 08
Mean	4 58	4 59	4 59	5 06	5 05	5 06	5 08	5 11	5 04	5 01	5 03	5 00	4 59

NOVEMBER, 1882.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	4 44	4 46	4 57	5 06	4 44	4 46	4 57	4 52	4 50	4 56	4 56	4 59	5 00
2	5 07	4 50	4 47	4 50	4 40	5 02	4 34	6 15	6 08	6 18	6 14	6 59	6 11
3	4 27	4 34	5 03	5 03	5 05	5 00	5 00	5 12	4 53	4 57	4 57	4 44	4 44
4	5 02	5 29	5 21	5 05	4 59	5 11	5 09	5 08	5 05	5 10	5 04	5 08	5 00
5	4 47	4 38	4 52	4 52	5 03	4 40	4 52	5 01	4 54	5 01	4 58	4 43	4 52
6	4 38	4 44	4 56	5 03	4 55	4 45	4 45	4 39	4 51	4 37	4 49	5 01	5 01
7	5 02	4 49	5 08	4 49	4 35	4 41	4 41	4 47	5 01	4 55	5 02	4 56	4 56
8	5 44	5 44	4 33	4 42	4 42	4 32	4 23	4 47	4 56	4 40	4 53	4 51	5 16
9	4 57	5 55	5 36	5 05	5 05	5 05	5 05	5 05	4 41	5 18	5 12	5 43	5 41
0	4 41	4 41	4 36	4 46	5 11	5 34	5 35	5 29	5 36	5 00	5 13	4 57	5 09
11	4 48	4 48	4 48	4 48	4 48	4 48	4 54	5 04	4 55	5 01	5 12	4 49	5 04
12	5 00	5 00	5 00	4 49	4 49	4 53	4 53	4 53	5 01	4 54	5 02	5 17	5 19
13	4 51	4 51	4 51	4 51	4 51	4 58	4 58	4 58	4 59	4 56	5 04	5 15	4 49
14	4 44	5 21	5 01	5 12	4 46	4 50	5 12	4 45	4 45	4 53	4 53	4 53	5 02
15	4 50	4 44	4 38	4 46	4 44	4 35	4 47	4 52	5 01	4 49	4 43	4 35	4 46
16	5 00	4 57	4 57	4 45	5 12	4 41	4 36	4 40	4 48	4 32	4 32	4 30	4 48
17	4 42	4 55	4 46	4 46	4 57	4 43	4 47	5 05	4 48	5 06	5 06	5 06	5 01
18	5 09	5 02	5 11	4 35	5 03	4 46	5 06	5 06	4 58	4 47	5 19	5 13	5 05
19	4 43	4 54	4 30	4 37	4 55	4 46	4 51	4 51	4 51	4 51	4 40	4 40	4 51
20	4 44	5 05	4 39	4 28	4 28	4 43	4 52	4 45	4 57	5 16	5 19	5 09	4 59
21	4 34	4 47	4 51	4 41	4 44	4 59	4 46	4 48	4 48	5 17	5 13	5 13	5 13
22	5 13	5 13	5 13	5 09	5 00	5 00	4 52	4 49	5 05	5 05	4 49	4 55	4 53
23	4 52	4 59	4 48	4 54	4 45	4 51	4 51	4 51	4 50	4 44	4 50	5 01	4 56
24	5 05	4 53	4 45	4 35	4 40	4 40	4 40	5 02	4 41	4 55	4 59	4 59	5 04
25	4 59	4 54	4 45	4 49	4 49	4 48	4 48	4 53	4 58	4 52	5 02	5 04	4 57
26	4 34	4 45	4 45	5 04	5 04	5 04	5 04	5 04	4 56	4 56	5 01	5 01	5 01
27	4 54	4 45	4 45	4 45	4 45	4 51	4 51	5 01	5 09	4 36	5 05	4 56	4 51
28	4 58	4 50	4 50	4 50	4 51	5 03	5 03	4 56	5 09	4 48	4 55	4 55	5 03
29	4 48	4 48	4 48	4 54	4 54	4 54	4 54	5 03	5 01	5 15	4 54	5 17	4 52
30	4 51	4 56	4 56	4 56	4 50	4 50	4 50	4 44	4 46	4 59	4 51	4 55	4 41
Mean	4 53	4 57	4 53	4 51	4 52	4 52	4 53	4 59	4 59	4 59	5 02	5 04	5 02

NOTE.—Correction applied to the original record: For polarity north, $r = -15$; for circle west, $i = -10$; for face east, $b = +21$; total correction, $-4'$.

OCTOBER, 1882.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2.)

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50'' = 4^h 18^m 55.3^s$ (or $4^h 58^m 41.5^s$ W. of Göttingen).

Göttingen hours. 13	14	15	16	17	18	19	20	21	22	23	Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
5 19	5 14	5 14	5 00	4 51	4 51	4 57	5 30	5 15	5 02	5 02	65 46	50 00	24
5 14	5 20	5 07	5 11	5 17	5 18	5 06	5 11	5 23	5 09	5 09	66 25	50 00	25
5 17	5 09	5 16	4 50	4 43	4 27	4 46	4 42	4 42	4 39	4 39	66 52	50 00	26
4 45	4 51	4 49	4 49	4 53	4 55	4 49	4 44	4 44	4 42	4 42	65 00	50 00	27
5 15	5 09	4 54	4 57	4 45	4 54	4 57	5 15	4 57	5 16	4 53	64 27	64 27	28
4 52	4 58	5 03	4 55	4 53	4 55	5 05	5 05	4 50	5 02	5 02	62 12	62 12	29
5 07	4 42	5 09	5 05	5 34	4 56	5 12	5 00	5 05	4 51	4 54	66 00	66 00	30
5 18	5 10	5 02	5 11	4 58	5 24	4 58	5 07	5 09	4 59	4 56	65 39	71 00	31
5 08	5 04	5 04	5 00	4 59	4 58	4 59	5 04	5 01	4 57	4 55	----------	----------	Mean.

NOVEMBER, 1882.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Göttingen hours. 13	14	15	16	17	18	19	20	21	22	23	Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
4 52	4 59	4 45	5 09	4 45	4 56	4 55	----------	4 41	4 53	4 53	66 02	----------	1
5 56	5 07	5 35	5 35	4 53	4 57	4 57	5 18	5 01	5 01	4 30	66 01	----------	2
5 55	5 55	5 16	5 16	4 56	5 06	5 06	4 57	4 57	5 12	5 14	65 37	----------	3
5 20	4 55	5 18	5 01	5 24	5 10	5 12	5 25	5 34	4 46	4 52	65 45	----------	4
4 03	4 29	4 14	4 14	4 24	4 24	4 24	3 56	5 14	3 51	5 15	[1]66 45	----------	5
4 46	5 55	4 52	4 40	5 02	5 21	4 56	5 00	5 03	4 51	4 50	66 15	----------	6
4 55	4 38	5 03	4 57	4 50	4 46	4 48	5 02	4 48	4 55	5 01	66 16	----------	7
4 53	4 44	4 54	4 49	5 11	5 04	4 56	4 56	4 41	4 48	4 48	66 16	----------	8
5 41	5 35	5 23	5 18	5 24	4 48	5 16	5 16	5 09	5 15	4 58	66 16	----------	9
5 09	5 19	5 12	5 47	5 02	4 57	5 24	5 13	5 03	4 59	5 21	66 16	----------	10
5 19	4 58	5 05	5 04	5 04	4 59	4 59	5 05	5 00	5 00	5 00	65 25	----------	11
5 21	5 21	5 17	5 12	5 11	4 59	4 47	4 47	4 47	4 47	4 47	65 25	----------	12
4 57	5 01	4 53	4 53	5 06	4 43	4 55	5 04	4 49	5 13	5 03	66 27	----------	13
5 02	4 50	5 08	5 14	4 58	4 41	4 57	5 16	4 54	4 54	4 43	65 08	----------	14
4 37	4 36	5 00	5 00	5 02	5 16	5 11	5 24	----------	4 56	4 51	64 30	----------	15
4 37	4 50	4 41	4 41	4 41	4 41	4 41	4 41	4 41	4 41	4 53	[2]66 11	----------	16
5 03	4 55	5 01	5 33	5 13	5 28	5 06	5 09	4 44	5 18	4 49	66 03	----------	17
4 59	4 59	4 48	4 38	4 45	4 37	4 33	4 31	4 33	4 33	4 33	64 00	----------	18
4 51	4 51	4 53	4 53	4 53	4 54	4 54	4 53	4 53	5 17	4 53	66 04	----------	19
5 08	5 34	5 26	5 26	5 11	5 19	4 16	4 41	5 00	4 44	4 54	66 12	----------	20
5 24	4 58	4 48	4 52	5 15	5 18	5 18	5 50	5 50	5 50	5 53	67 03	----------	21
5 06	5 07	4 53	4 53	4 46	4 54	4 54	4 52	5 08	4 57	5 01	67 00	----------	22
4 56	4 49	4 51	4 51	4 48	4 48	4 49	4 49	4 51	4 51	4 45	67 15	----------	23
4 57	4 55	4 48	4 59	5 06	4 44	4 52	4 41	4 46	4 53	5 57	66 10	----------	24
4 53	4 56	4 51	4 53	4 48	4 53	4 53	4 56	4 47	4 47	4 47	66 10	----------	25
4 57	4 51	5 20	5 03	5 10	4 59	4 50	5 11	4 59	4 52	4 44	66 22	----------	26
5 03	5 14	4 53	4 49	4 58	5 03	4 48	5 08	4 46	4 44	4 53	66 22	----------	27
4 56	4 48	5 01	4 54	4 51	5 06	4 59	4 56	5 04	4 47	4 48	66 22	----------	28
4 54	4 56	4 53	5 32	5 23	5 11	5 19	4 50	4 44	4 43	4 36	66 22	----------	29
5 01	5 01	5 02	4 45	4 51	5 05	5 01	5 01	4 46	4 42	4 56	[3]66 59	----------	30
5 03	5 00	5 00	5 01	5 00	4 58	4 56	5 00	4 56	4 54	4 57	----------	----------	Mean.

[1] Azimuth circle: 58° 19′ at noon; 46° 00′ 1 p. m. to 10 p. m.; 66° 00′ 11 p. m.
[2] Azimuth circle: 64° 30′ from 0 to 2 a. m.; 66° 11′ from 2 a. m to 2 p. m.; 66° 14′ from 3 p. m. to 11 p. m.
[3] Azimuth circle: 65° 59′ from 0 a. m. to noon.

DECEMBER, 1882.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	--------	4 56	4 59	5 38	4 53	5 01	5 06	4 56	5 02	5 07	4 51	4 39	4 54
2	4 52	4 54	4 54	5 20	4 51	4 46	4 56	4 48	4 48	4 48	4 57	4 58	4 58
3	4 42	4 54	5 00	5 00	5 27	5 35	4 56	5 15	5 06	5 19	5 07	5 05	4 52
4	4 50	4 58	5 15	5 23	5 15	4 56	4 58	4 46	4 41	4 41	4 41	5 12	4 58
5	4 54	4 34	4 45	5 03	5 31	4 48	5 09	4 55	5 06	4 54	5 17	5 46	5 55
6	4 50	5 28	5 59	6 06	5 44	5 03	4 49	4 45	5 18	5 29	4 55	4 37	5 14
7	5 23	5 22	5 11	5 03	5 41	5 24	5 58	4 33	5 29	4 52	4 52	4 37	5 48
8	5 46	5 39	5 43	5 46	4 57	4 38	4 54	5 06	4 53	4 53	4 56	5 13	5 00
9	5 06	5 06	5 18	4 56	4 56	4 49	4 27	4 55	4 49	4 49	4 55	5 05	4 48
10	5 24	4 59	5 14	5 01	5 09	4 34	5 05	4 50	4 44	4 34	4 44	4 54	4 51
11	4 57	4 51	4 46	5 16	5 01	5 01	4 52	4 55	4 42	4 59	4 59	5 06	5 06
12	4 39	4 32	5 16	4 55	5 01	5 09	4 52	5 04	4 57	4 57	4 51	4 57	5 04
13	5 24	5 06	5 02	4 55	5 16	5 15	5 27	5 11	5 24	5 21	5 14	5 04	5 04
14	4 58	4 58	4 55	4 56	5 02	5 03	4 57	5 08	5 08	5 01	4 53	4 55	5 07
15	4 32	4 47	4 34	4 45	4 58	4 55	5 06	5 02	4 44	4 58	4 57	4 47	5 05
16	5 04	4 53	4 37	4 48	5 00	4 53	5 10	5 13	4 58	4 58	4 46	5 06	5 05
17	4 30	4 30	4 45	4 45	4 39	4 36	5 11	4 47	4 59	4 56	5 01	4 57	4 54
18	4 32	5 05	5 17	5 27	4 49	5 21	5 19	5 01	5 03	4 56	4 52	4 49	5 00
19	4 42	5 04	4 40	4 34	4 45	4 42	4 42	4 46	4 51	4 56	4 48	4 53	5 02
20	4 39	4 39	4 46	5 07	5 07	4 39	4 31	5 03	5 04	5 17	5 05	4 56	5 11
21	4 38	4 45	5 10	5 15	5 10	5 04	5 01	5 15	5 14	4 54	5 09	5 07	5 11
22	5 17	4 51	5 03	4 52	5 10	4 49	4 49	4 51	4 58	5 12	5 01	5 03	5 18
23	5 17	5 02	5 31	5 39	5 21	5 21	5 21	5 04	5 08	4 59	4 59	4 55	5 15
24	5 06	5 06	5 20	5 32	5 25	5 17	5 25	5 06	5 03	5 11	4 55	5 01	4 56
25	5 27	4 45	4 44	4 32	4 36	5 02	4 34	4 52	4 40	4 59	5 03	5 03	4 58
26	4 34	6 30	6 16	5 41	5 42	5 42	5 52	6 11	5 33	5 14	5 14	5 28	5 28
27	5 14	5 07	5 13	5 15	5 13	5 13	5 13	5 16	5 16	5 16	5 14	5 14	5 14
28	4 55	4 42	4 42	4 54	4 41	4 42	4 35	5 17	5 01	4 46	4 17	4 56	5 04
29	4 43	4 48	4 43	4 46	4 44	4 45	4 51	5 14	5 14	5 07	5 07	5 05	5 05
30	4 39	4 39	4 39	4 52	4 56	4 42	4 34	4 34	5 04	5 04	5 16	5 14	5 14
31	4 34	5 18	5 01	4 41	4 41	5 08	4 48	4 48	5 12	5 02	4 59	4 59	5 12
Mean	4 56	5 00	5 04	5 07	5 05	5 00	5 01	5 01	5 02	5 01	4 58	5 01	5 07

NOTE.—Correction applied to original record: —4′, as in preceding mouth.

DECEMBER, 1882.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Göttingen hours. 13	14	15	16	17	18	19	20	21	22	23	Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
5 03	4 45	4 50	5 05	5 03	4 57	5 02	4 54	4 50	5 06	5 06	66 21	----------	1
5 18	5 03	5 11	4 58	4 48	4 49	4 49	5 11	4 52	4 49	5 01	65 54	----------	2
4 31	4 53	5 06	4 36	4 46	4 31	5 05	5 01	5 11	5 24	5 48	65 33	----------	3
5 01	4 49	4 45	4 45	5 09	4 50	5 24	5 04	4 44	5 17	5 17	65 30	----------	4
5 16	5 22	5 04	5 06	5 03	5 01	5 05	4 57	4 48	4 55	4 47	66 05	----------	5
4 50	4 36	5 27	5 10	4 35	4 48	4 41	5 19	4 49	4 49	5 24	65 54	----------	6
5 33	4 49	4 49	5 21	5 11	4 32	5 19	5 09	5 06	5 03	5 17	66 06	----------	7
5 09	5 09	4 54	4 38	4 48	4 40	5 11	5 07	4 57	4 52	4 56	66 12	----------	8
4 56	5 04	5 04	5 04	4 48	5 10	4 57	4 57	5 02	5 02	4 46	66 25	----------	9
4 54	4 54	4 32	4 32	4 42	4 46	4 46	4 58	4 58	5 02	4 54	66 14	----------	10
4 53	5 01	4 31	4 38	5 10	4 44	5 09	5 06	4 50	4 42	4 55	66 20	----------	11
4 56	4 55	4 42	4 59	5 15	4 48	4 51	5 00	4 38	4 45	4 55	66 15	----------	12
4 59	5 24	5 24	4 59	5 07	5 24	5 14	5 14	5 17	5 16	5 16	[1]66 08	----------	13
4 56	4 46	5 05	5 27	5 11	5 39	4 38	4 49	5 00	4 46	4 49	66 13	----------	14
4 55	4 44	5 04	5 10	4 37	4 54	5 14	4 42	5 01	4 58	----------	66 13	----------	15
5 03	5 17	4 56	4 46	4 46	4 56	4 39	4 26	4 56	5 20	4 35	65 04	----------	16
4 55	4 55	4 52	4 52	4 44	5 22	5 22	4 43	4 43	4 39	4 29	65 09	----------	17
4 51	4 57	4 56	4 51	4 51	4 51	4 48	5 04	5 00	4 56	5 16	65 09	----------	18
4 59	5 16	5 00	4 36	4 36	4 56	4 50	5 12	5 09	5 05	5 05	65 23	----------	19
5 08	5 14	5 14	4 50	4 54	4 44	4 44	4 50	4 50	5 01	5 13	65 54	----------	20
5 03	5 10	5 01	5 01	4 51	4 56	5 16	4 53	4 53	4 53	4 57	65 54	----------	21
5 15	5 11	4 50	4 50	4 49	4 49	4 49	4 49	5 12	4 49	5 07	65 45	----------	22
4 57	5 07	5 23	5 25	5 25	5 21	4 54	5 20	5 25	5 25	5 13	66 12	----------	23
4 59	5 01	5 24	5 24	5 18	5 24	5 24	5 24	5 23	5 23	5 23	66 12	----------	24
4 58	4 58	5 14	5 11	5 20	5 13	5 58	5 01	4 53	4 48	4 41	66 34	----------	25
5 20	5 5[illegible]	6 17	6 06	5 42	5 09	5 18	5 06	5 17	5 10	5 26	67 07	----------	26
4 53	4 3[illegible]	4 48	4 48	4 38	5 08	4 58	4 58	4 51	4 55	4 36	66 31	----------	27
5 13	5 08	5 17	5 07	5 13	5 11	5 11	5 06	5 08	4 59	4 49	66 24	----------	28
5 03	4 50	5 01	4 56	4 56	4 56	4 55	4 50	4 48	4 56	4 34	66 08	----------	29
5 05	5 01	5 00	5 01	5 06	4 59	5 02	5 00	5 05	5 05	4 41	66 12	----------	30
5 03	5 08	5 03	4 41	5 21	4 56	4 58	5 08	4 47	4 59	5 00	66 20	----------	31
5 02	5 02	5 03	5 00	4 59	4 59	5 01	5 01	4 59	5 00	5 01	----------	----------	Mean.

[1] Azimuth circle, 66° 12′, 3 p. m. to 11 p. m.

JANUARY, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 30''$

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	4 56	5 12	5 06	5 11	4 47	4 46	4 51	4 53	5 02	4 52	4 40	4 48	4 49
2	4 58	4 47	5 01	5 06	5 06	5 14	4 55	4 59	4 44	4 44	4 41	4 47	4 33
3	5 03	4 54	4 58	5 05	5 21	5 00	5 03	4 52	5 05	4 48	4 44	5 07	4 47
4	5 22	4 59	5 00	5 10	5 17	5 13	4 21	5 33	5 34	5 17	5 12	5 29	5 21
5	5 16	4 56	5 17	5 07	5 07	4 55	5 01	4 56	4 59	5 15	4 48	5 02	4 55
6	4 57	4 48	4 56	4 58	4 58	5 05	5 06	5 09	4 52	4 47	5 27	5 02	5 18
7	4 55	4 50	4 52	5 00	4 56	4 50	4 57	4 48	4 59	4 47	5 05	4 47	4 42
8	5 07	4 57	5 03	4 55	5 14	5 06	4 58	4 47	4 52	5 16	5 11	5 09	4 47
9	4 50	5 48	5 15	5 15	5 00	4 52	5 14	5 07	5 00	4 56	4 57	4 56	5 06
10	5 03	5 06	5 06	5 07	5 17	5 19	5 08	4 55	4 59	4 51	4 56	4 59	5 01
11	5 11	5 04	5 03	5 13	5 07	5 11	5 11	5 01	5 13	5 02	4 54	4 56	5 05
12	5 06	5 01	5 03	5 03	5 04	5 04	5 04	5 04	4 57	4 57	4 52	4 57	5 06
13	5 14	5 14	5 06	5 03	5 03	5 04	5 14	5 08	5 15	5 12	5 12	4 56	4 54
14	4 58	5 01	4 59	5 07	5 02	5 05	5 05	4 57	5 01	5 19	5 08	4 54	5 14
15	5 09		4 57	5 04	4 36	5 04	5 01	5 16	4 59	5 14	5 07	5 06	5 15
16	5 00	5 01	4 51	4 48	4 44	4 56	5 10	5 10	4 48	4 51	4 51	4 51	5 06
17	4 50	5 00	5 05	5 02	5 10	5 11	4 54	4 55	4 50	4 52	4 49	4 54	4 54
18	4 59	5 17	5 25	4 46	5 13	5 09	4 50	4 52		4 55	4 53	4 46	4 49
19	4 26	4 50	4 48	4 52	4 58	4 51	4 40	4 40	4 42	5 00	5 05	5 10	5 16
20	5 01	4 29	4 23	4 25	4 52	4 55	4 56	4 57	4 56	5 02	4 56	4 51	4 53
21	5 09	5 06	5 32	5 39	5 19	4 38	4 56	4 58	4 54	4 52	5 01	5 03	5 08
22	5 01	4 48	4 59	4 24	4 48	4 54	5 05	5 06	5 04	5 04	5 00	5 06	5 09
23	4 50	5 24	5 31	5 11	5 51	5 04	4 55	5 00	4 51	5 04	5 06	4 59	4 54
24	4 43	4 51	4 51	4 54	4 54	4 48	4 54	4 54	4 54	4 56	4 56	4 56	4 48
25	5 26	5 26	5 08	4 57	5 15	4 59	5 19	5 13	5 19	5 36	5 25	4 57	4 57
26	5 07	4 50	4 59	5 15	5 11	5 14	5 09	5 04	5 00	5 03	5 05	5 04	5 10
27	5 01	5 11	5 00	5 01	5 09	4 56	4 56	4 47	5 15	4 55	5 09	5 00	4 58
28	5 06	5 20	4 55	4 55	5 01	5 01	5 05	4 59	4 31	4 53	4 46	4 47	4 53
29	4 48	4 35	4 56	5 05	5 07	5 01	4 55	5 17	5 04	5 02	4 59	4 32	5 03
30	4 55	4 55	4 56	4 57	4 55	4 47	4 45	5 05	5 03	5 05	4 49	4 52	5 02
31	5 13	5 05	5 09	5 03	5 13	5 02	5 09	5 13	4 57	5 10	5 13	5 13	5 09
Mean	5 01	5 02	5 02	5 01	5 05	5 00	5 00	5 01	4 59	5 01	5 00	4 58	5 00

NOTE.—Correction applied to original record: −4′, as in preceding month.

JANUARY, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Göttingen hours.											Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
13	14	15	16	17	18	19	20	21	22	23			
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
4 57	5 08	4 59	4 56	5 00	4 44	4 44	4 50	5 21	4 48	5 01	66 20	----------	1
4 58	4 51	4 45	4 59	4 44	4 44	4 44	4 44	4 44	4 44	5 01	66 21	----------	2
4 58	4 46	4 46	4 46	4 53	4 55	4 59	4 53	4 52	4 52	4 58	66 22	----------	3
5 25	5 28	5 29	5 29	5 26	5 21	5 26	5 21	5 19	5 19	5 04	66 25	----------	4
5 06	4 47	4 48	4 48	4 98	4 55	4 54	4 54	5 13	5 13	5 07	66 25	----------	5
4 56	4 47	4 47	4 45	5 04	4 56	4 47	5 17	4 59	4 51	5 01	66 25	----------	6
5 04	4 44	4 56	4 59	5 15	5 10	4 50	4 50	4 50	4 50	5 14	66 25	----------	7
4 42	4 43	4 44	4 50	4 46	4 46	4 47	4 46	4 45	4 55	5 01	66 25	----------	8
5 03	5 02	5 09	4 57	5 08	5 07	5 02	4 55	4 57	4 57	5 02	67 25	----------	9
5 20	5 09	5 07	5 00	5 04	4 53	5 06	5 09	5 00	4 57	5 13	67 25	----------	10
5 05	4 55	5 06	4 58	4 54	4 56	5 07	5 08	4 49	4 56	5 04	67 25	----------	11
5 00	5 16	5 00	4 56	4 56	4 44	5 14	5 21	4 56	5 01	5 10	67 25	----------	12
4 57	5 20	4 59	4 56	5 07	4 48	4 58	5 00	5 04	5 00	5 00	67 25	----------	13
5 16	4 57	4 59	4 59	5 23	5 12	5 07	5 14	5 07	5 08	5 00	67 25	----------	14
5 16	5 15	5 07	5 35	5 09	5 17	5 08	5 06	5 06	5 04	5 06	67 25	----------	15
5 02	4 50	4 52	5 11	5 14	5 01	5 02	4 53	5 16	4 57	5 13	67 25	----------	16
4 56	4 48	5 19	5 11	5 15	5 28	5 17	5 14	5 01	4 46	4 54	65 56	----------	17
4 47	4 46	4 51	5 00	4 57	5 16	5 17	5 01	4 54	4 35	4 45	66 23	----------	18
5 06	4 58	4 57	4 43	4 58	4 45	5 08	4 57	4 57	4 56	4 31	66 57	----------	19
4 54	4 54	4 57	5 01	4 58	5 02	4 54	4 41	4 54	4 26	4 58	66 57	----------	20
5 04	5 02	4 36	4 41	5 06	5 11	5 07	5 19	4 58	4 36	5 02	66 46	----------	21
5 04	4 58	5 24	5 06	4 53	5 01	4 34	5 24	4 30	5 15	5 08	66 40	----------	22
5 13	5 04	5 25	5 17	5 06	5 04	5 00	4 59	4 59	4 55	4 29	66 16	----------	23
4 52	4 36	4 36	4 45	4 56	5 08	5 21	5 01	5 01	4 51	5 23	66 16	----------	24
5 34	5 20	5 22	5 06	5 22	5 13	5 03	5 04	5 16	5 04	5 02	64 59	----------	25
5 07	5 19	5 15	5 16	4 58	4 46	4 43	4 57	4 54	4 52	5 16	66 29	----------	26
4 58	5 11	5 11	4 44	4 51	4 45	4 54	5 11	5 21	5 16	5 07	66 27	----------	27
5 02	4 46	4 55	5 01	5 03	4 51	4 46	4 56	4 57	4 56	4 56	66 27	----------	28
4 53	5 02	5 11	5 07	5 01	4 59	5 16	5 17	5 03	5 01	5 01	66 23	----------	29
5 11	5 08	5 02	4 53	4 54	5 04	5 07	5 07	5 14	5 21	5 21	66 23	----------	30
5 06	5 00	5 02	5 00	4 53	4 56	5 00	5 11	4 52	4 52	4 56	66 23	----------	31
5 04	5 00	5 01	5 00	5 02	5 00	5 01	5 03	5 00	4 56	5 02	----------	----------	Mean.

FEBRUARY, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	4 56	5 01	5 06	5 04	5 15	5 19	5 06	5 11	5 09	5 05	4 56	5 11	5 13
2	5 05	5 14	5 06	5 09	4 54	4 44	4 44	5 13	5 11	5 03	5 03	5 00	5 09
3	4 50	5 06	5 03	4 46	5 00	5 05	5 05	5 04	4 57	4 50	5 06	4 57	4 59
4	4 57	4 57	4 54	5 15	5 05	4 59	4 59	4 49	4 57	4 57	5 11	5 07	4 58
5	4 58	4 58	4 47	5 02	5 02	5 15	5 04	5 04	4 55	5 10	4 57	5 07	5 09
6	5 19	4 56	5 02	5 11	5 11	4 50	5 13	5 10	5 04	5 11	5 06	5 08	5 15
7	5 16	5 04	5 15	5 07	5 07	5 11	5 11	5 11	5 06	5 07	5 10	5 20	5 08
8	5 02	5 01	5 01	4 54	5 01	5 08	5 08	5 02	5 05	5 01	5 06	5 04	5 02
9	5 04	4 38	4 57	4 37	5 06	4 56	5 09	5 14	5 16	5 18	5 16	5 16	5 20
10	5 08	5 10	5 18	5 52	5 26	4 38	4 53	4 56	4 55	4 51	4 48	4 46	4 45
11	4 41	4 47	4 42	5 03	4 40	5 01	4 59	4 57	4 55	4 51	5 00	4 56	4 55
12	5 04	5 09	5 09	4 46	4 50	4 52	4 43	4 42	4 45	4 46	4 59	5 00	5 06
13	4 40	4 49	4 42	4 59	4 51	4 53	5 04	5 06	5 04	5 04	5 08	5 07	5 07
14	5 02	4 54	4 28	5 09	5 31	5 18	5 17	4 32	4 55	4 14	4 52	5 11	4 41
15	5 06	4 46	5 04	4 57	5 01	5 09	5 05	5 04	5 01	5 17	5 05	5 00	5 03
16	5 11	5 16	5 01	5 02	5 11	5 09	5 07	5 11	5 00	4 47	5 09	4 39	4 44
17	5 20	5 15	5 00	5 21	4 52	4 55	4 57	4 57	4 57	5 04	4 59	5 05	4 56
18	4 45	5 07	4 35	4 51	4 59	5 01	5 15	5 17	4 57	4 55	4 37	5 03	4 55
19	4 36	5 05	5 00	4 22	4 56	5 05	4 58	4 19	5 30	4 59	4 51	5 05	5 03
20	5 25	5 06	4 35	4 47	5 05	4 58	5 21	4 58	4 50	5 10	5 10	5 07	5 04
21	4 46	4 59	5 25	4 47	5 01	5 01	4 59	5 07	4 53	5 08	4 47	4 49	4 43
22	4 34	5 10	4 36	4 35	5 11	5 00	4 56	4 49	4 51	5 07	5 06	4 56	5 08
23	6 11	5 26	5 06	5 53	5 41	5 10	5 33	5 27	4 51	4 51	5 06	5 02	5 16
24	4 29	4 35	4 46	4 36	4 36	4 21	4 21	4 36	4 54	4 54	5 08	5 06	5 14
25	4 35	4 24	4 37	4 49	4 49	4 56	4 56	5 06	5 25	5 30	5 28	5 26	5 26
26	5 45	5 01	5 03	5 03	4 35	4 35	4 35	4 34	5 01	5 16	5 27	4 48	4 56
27	4 46	5 02	5 02	5 18	4 59	4 54	4 54	5 03	5 11	5 22	4 56	5 22	5 07
28	4 26	5 07	4 37	5 07	4 42	4 46	5 14	5 10	5 16	5 16	4 39	4 56	5 01
Mean	5 00	5 00	4 56	5 01	5 01	4 58	5 02	5 00	5 02	5 02	5 02	5 03	5 03

NOTE.—Correction applied to original record: $-4'$, as in preceding month.

FEBRUARY, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Göttingen hours.											Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
13	14	15	16	17	18	19	20	21	22	23			
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
5 06	5 16	5 11	5 07	5 02	5 07	5 06	4 53	5 09	5 09	5 05	66 23	----------	1
5 10	5 10	5 08	5 02	4 55	4 55	4 56	5 02	5 05	5 00	5 00	66 20	----------	2
4 51	4 57	4 57	5 03	5 03	5 15	5 07	4 56	4 47	4 49	4 57	66 20	----------	3
5 16	5 01	5 01	5 01	4 51	4 51	4 57	4 53	4 54	5 05	4 49	66 20	----------	4
5 18	5 03	4 55	5 01	5 10	5 17	5 17	4 51	4 53	5 02	5 11	66 20	----------	5
4 19	5 16	5 04	4 56	5 03	5 03	4 52	4 56	4 50	5 19	5 19	66 20	----------	6
5 11	5 06	5 14	5 04	4 56	4 56	5 08	5 08	5 06	4 58	5 16	66 20	----------	7
5 02	5 06	5 03	4 57	5 01	5 03	5 08	5 08	4 58	5 03	5 07	66 20	----------	8
5 14	5 10	5 11	5 11	4 58	4 58	5 06	4 51	4 20	4 49	4 56	66 48	----------	9
4 51	4 42	4 29	5 01	5 16	5 05	5 08	5 08	5 04	5 06	4 56	66 37	----------	10
4 56	5 01	5 08	5 08	5 01	5 05	5 02	4 51	4 38	5 05	4 52	66 47	----------	11
5 04	5 01	5 11	4 54	5 01	5 01	4 54	5 01	5 06	4 57	4 45	66 00	----------	12
5 01	4 59	5 09	5 05	5 01	5 01	5 05	5 16	4 46	4 39	5 01	66 33	----------	13
5 19	5 06	4 57	5 01	4 39	4 59	4 47	4 35	4 46	5 01	5 01	66 47	----------	14
5 09	5 04	5 03	4 47	4 50	5 01	5 00	5 11	4 58	5 10	4 56	65 47	----------	15
5 11	5 06	4 44	4 35	4 50	4 54	4 34	4 34	4 43	4 43	5 21	66 17	----------	16
4 52	4 59	4 36	4 46	4 28	5 06	4 46	5 13	4 48	4 39	5 05	66 17	----------	17
4 46	4 56	4 29	4 35	4 54	5 08	4 24	4 53	4 30	4 49	5 03	66 17	----------	18
5 07	5 06	4 24	5 02	4 31	5 03	4 04	4 30	5 10	4 30	4 27	66 17	----------	19
5 08	5 04	4 17	4 53	4 39	4 24	4 35	4 35	4 42	4 42	4 41	66 17	----------	20
5 00	4 31	4 31	4 33	5 09	5 04	4 36	4 41	4 41	4 35	5 01	65 44	----------	21
5 03	4 41	5 12	4 53	5 12	5 13	5 09	5 10	4 56	5 04	5 04	66 15	----------	22
4 56	5 21	5 12	5 19	5 10	5 07	4 55	4 41	5 04	5 07	4 56	66 27	----------	23
5 54	5 19	5 24	5 28	5 21	5 30	5 32	5 26	5 24	5 04	5 04	65 46	----------	24
5 28	5 28	5 44	5 42	5 42	5 11	5 06	5 10	5 32	5 24	5 04	65 46	----------	25
4 56	5 22	5 14	5 04	5 34	5 43	5 21	5 30	5 30	5 27	5 01	65 46	----------	26
5 06	5 10	5 15	5 08	5 09	5 21	4 47	4 47	4 47	5 09	5 09	65 46	----------	27
4 34	5 17	5 14	4 36	5 08	4 46	4 50	4 57	4 57	4 26	4 26	65 46	----------	28
5 04	5 05	5 00	5 00	5 01	5 05	4 56	4 57	4 58	4 58	4 59	----	--------	Mean.

MARCH, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	5 1[illegible]	4 58	5 02	[1]4 24	5 11	5 10	4 54	4 56	5 14	5 02	4 56	4 59	5 21
2	4 57	5 06	5 17	5 16	5 08	4 54	4 56	5 18	4 49	4 42	4 42	4 50	5 07
3	5 03	4 42	4 54	4 47	4 40	4 53	4 58	4 48	5 07	5 20	5 50	5 09	5 16
4	4 51	5 25	4 51	4 52	4 56	4 51	4 28	5 13	4 27	5 07	4 55	4 48	4 58
5	4 50	4 42	4 52	5 55	5 36	5 13	5 01	5 01	5 17	5 14	5 14	5 14	5 14
6	5 11	5 16	5 16	4 48	4 55	4 49	4 59	4 58	4 37	4 49	4 49	5 00	5 12
7	5 18	5 09	4 49	5 16	5 06	5 24	4 54	5 00	5 06	5 16	5 16	5 07	5 10
8	4 28	4 54	4 48	4 58	4 56	4 59	4 36	4 30	4 38	5 08	4 34	5 02	5 06
9	5 57	5 14	5 21	5 21	5 05	4 51	5 19	5 11	5 15	5 13	5 06	5 00	5 01
10	5 16	5 20	5 16	5 16	5 13	5 02	4 51	4 51	5 17	5 12	5 10	5 04	4 59
11	5 15	5 06	4 46	5 11	5 20	5 03	5 03	5 15	5 07	5 06	5 14	5 17	5 20
12	4 31	4 37	4 53	4 58	4 49	5 03	4 50	4 56	5 05	4 57	5 11	5 09	5 02
13	4 59	5 09	5 17	4 50	4 56	4 56	4 50	5 06	5 18	5 05	5 21	4 48	5 03
14	4 5[illegible]	5 03	5 15	5 14	5 11	4 46	5 01	5 18	5 23	5 02	5 02	4 45	4 53
15	4 58	5 01	4 56	5 03	4 58	5 03	5 03	5 16	4 35	4 57	5 05	5 09	5 15
16	6 34	5 21	5 09	5 07	5 00	5 12	5 23	5 06	4 51	4 41	4 54	4 56	4 47
17	5 20	5 14	5 14	5 08	5 08	5 30	5 12	4 59	4 56	5 03	5 01	4 58	4 59
18	5 06	5 09	5 03	5 03	5 03	5 03	4 52	4 55	4 56	4 43	4 53	5 05	5 03
19	5 43	5 37	5 10	5 11	4 51	5 04	4 46	4 53	5 04	5 00	4 57	5 01	5 01
20	5 09	5 09	4 52	4 52	4 45	4 57	4 57	5 03	4 58	4 56	4 51	5 02	4 59
21	5 18	5 05	4 54	5 10	5 16	5 16	5 16	5 08	5 08	5 01	5 09	5 15	5 03
22	5 29	5 20	5 10	5 03	5 13	5 03	5 11	5 11	5 23	5 05	5 02	5 13	5 13
23	4 45	4 55	5 17	5 09	5 33	5 37	5 21	5 21	5 15	5 15	5 12	5 12	4 57
24	5 09	5 10	5 10	4 53	5 02	5 20	5 32	5 06	5 00	5 39	5 19	5 16	5 08
25	4 48	5 00	5 08	5 06	4 56	4 58	4 44	5 23	5 03	4 52	4 52	4 58	4 58
26	----	----	----	----	----	----	----	----	----	----	----	----	----
27	----	----	----	----	----	----	----	----	----	----	----	----	----
28	----	----	----	----	----	----	----	----	----	----	----	----	----
29	----	----	----	----	----	----	----	----	----	----	----	----	----
30	4 30	4 27	4 29	4 28	4 27	4 31	4 32	4 40	4 33	5 02	4 46	4 43	4 43
31	4 28	4 28	4 27	4 27	4 32	4 31	4 33	4 33	4 39	4 56	4 56	5 24	5 13
Mean	5 06	5 04	5 01	5 02	5 02	5 02	4 58	5 02	5 00	5 03	5 03	5 03	5 02

[1] Readings discrepant.

NOTE.—Correction applied to original record: March 1 to March 25, —4′, as in preceding month; March 30, 31, —15′, as in following month.

MARCH, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Göttingen hours.											Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
13	14	15	16	17	18	19	20	21	22	23			
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
5 05	5 01	5 19	5 16	5 02	5 12	5 23	5 01	5 11	5 05	4 58	66 31	----	1
5 07	5 07	5 15	5 13	5 13	5 09	5 18	5 10	5 15	5 00	5 16	65 51	----	2
5 26	4 59	5 11	5 19	5 13	5 15	4 59	5 13	5 12	5 12	4 51	67 43	----	3
4 58	5 11	5 13	5 18	5 15	5 22	5 16	5 17	5 16	5 01	5 15	66 52	----	4
5 08	4 51	5 16	5 15	5 22	5 20	5 07	5 11	5 17	5 18	5 13	66 54	----	5
5 01	4 41	5 16	5 20	5 16	5 19	5 21	5 20	5 06	5 03	5 25	66 23	----	6
5 17	5 13	5 10	5 19	5 20	4 57	5 19	5 23	5 09	5 15	5 15	66 25	----	7
5 05	4 59	4 57	4 59	5 19	5 01	4 58	5 09	5 04	5 19	5 04	66 02	----	8
4 56	5 12	5 12	5 12	5 05	5 18	5 08	5 21	5 21	5 06	5 06	65 28	----	9
5 07	5 07	5 10	5 10	5 10	5 10	4 58	5 18	5 18	5 24	5 11	65 28	----	10
5 19	5 22	5 22	5 22	5 11	5 11	5 20	5 11	5 19	5 13	5 10	65 30	----	11
5 04	5 10	5 05	4 52	4 43	4 38	4 37	4 51	4 51	4 57	5 03	65 54	----	12
5 13	5 04	5 13	5 19	5 19	5 15	5 21	5 21	5 21	5 07	5 07	65 58	----	13
4 53	5 09	5 17	5 17	5 11	5 07	5 07	5 19	4 45	4 49	4 58	66 00	----	14
5 14	5 14	5 02	4 56	4 58	5 01	4 56	4 57	5 13	5 11	4 58	66 00	----	15
4 50	4 53	5 13	4 51	5 11	5 16	5 07	5 13	4 58	5 19	4 50	66 23	----	16
4 55	4 59	5 13	5 08	5 03	5 08	5 01	5 06	5 06	5 51	4 59	65 07	----	17
4 58	4 59	5 16	5 15	5 15	5 11	5 07	5 03	5 14	5 01	4 55	65 07	----	18
4 59	4 59	4 30	4 57	5 13	5 10	5 02	5 02	5 06	5 01	5 05	66 30	----	19
5 05	5 03	5 13	5 20	5 17	5 10	5 11	5 11	5 20	5 17	5 06	66 30	----	20
4 59	5 01	5 06	5 17	5 11	5 16	5 18	5 11	5 15	5 20	5 06	66 30	----	21
5 05	5 12	5 11	5 21	5 07	5 05	5 04	5 00	4 57	4 56	5 09	66 30	----	22
5 06	5 19	5 21	5 11	5 19	5 06	5 07	5 20	5 10	5 09	5 12	66 30	----	23
4 44	5 10	5 19	5 06	5 20	5 32	5 13	5 18	5 20	5 37	5 11	66 30	----	24
5 08	4 49	5 05	5 05	4 52	5 05	4 56	4 56	4 54	5 03	5 08	67 14	----	25
----	----	----	----	----	----	----	----	----	----	----	67 00	----	26
----	----	----	----	----	----	----	----	----	----	----	67 00	----	27
----	----	----	----	----	----	----	----	----	----	----	67 00	----	28
----	----	----	----	----	----	----	----	----	----	----	67 00	----	29
4 43	5 10	4 29	4 33	4 58	4 34	4 21	4 45	4 35	4 29	4 24	67 00	----	30
5 08	4 47	5 22	5 11	4 35	5 07	4 46	4 52	4 44	4 34	4 23	67 58	----	31
5 03	5 04	5 09	5 10	5 09	5 08	5 05	5 09	5 07	5 08	5 03	----	----	Mean.

APRIL, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	4 39	5 04	4 57	4 59	5 01	5 43	....	5 14	4 51	4 47	4 54	5 28	4 41
2	4 55	4 51	4 55	4 13	5 19	5 19	5 29	4 47	4 55	4 50	4 56	4 55	4 49
3	5 02	5 01	4 58	5 03	5 08	5 08	5 24	5 01	4 53	4 45	4 46	4 54	5 00
4	5 12	4 48	4 40	4 57	4 55	4 58	4 58	4 21	4 29	4 40	4 35	4 25	4 28
5	5 00	4 57	4 54	4 12	5 36	5 27	5 27	4 57	4 54	4 56	4 52	4 53	4 56
6	4 42	4 42	4 30	4 35	4 23	4 27	4 34	4 24	4 21	4 24	4 19	4 20	4 30
7	4 39	5 07	4 58	5 15	5 27	5 27	4 52	4 45	4 35	4 13	4 30	4 29	4 14
8	4 48	4 23	4 23	4 26	4 26	4 39	4 21	4 24	4 26	4 17	4 10	4 18	4 11
9	5 17	5 07	5 02	4 47	5 03	5 15	4 54	4 50	4 47	4 50	4 39	4 48	4 50
10	4 48	4 54	5 15	5 04	5 04	5 13	5 07	4 50	4 51	4 39	4 27	4 31	4 26
11	5 09	4 23	4 57	4 47	4 20	4 33	4 33	4 29	4 21	4 18	4 15	4 15	4 07
12	4 24	4 36	4 25	4 25	4 29	4 43	4 51	4 24	4 09	4 15	4 21	4 26	4 11
13	4 54	4 54	4 59	5 01	5 20	5 20	5 20	4 55	4 44	4 52	4 50	4 51	4 44
14	4 54	4 56	4 42	4 47	4 54	4 54	4 50	5 11	5 16	5 13	4 51	5 23	5 32
15	5 19	5 04	5 08	4 54	5 17	5 03	4 59	5 00	4 48	5 01	4 45	4 46	4 46
16	5 21	4 42	5 05	5 25	5 06	5 05	5 35	5 19	5 19	5 24	5 15	4 57	5 05
17	4 50	5 10	5 37	5 27	5 08	5 13	4 41	5 20	5 08	5 38	5 21	5 19	5 19
18	5 08	4 52	5 15	5 05	5 14	5 05	5 14	5 08	5 08	5 06	5 17	5 07	4 57
19	4 35	4 40	5 21	4 45	5 03	5 27	5 39	5 11	5 03	5 03	5 03	4 52	4 52
20	5 17	5 26	5 10	4 58	5 10	5 20	5 04	5 25	5 25	5 13	5 16	5 10	5 15
21	4 49	5 08	5 08	5 14	5 34	5 10	5 05	4 47	4 49	5 07	5 07	5 01	5 15
22	5 04	5 10	5 04	5 13	4 48	5 10	5 34	4 54	5 23	5 13	4 55	4 40	5 31
23	5 09	5 40	5 13	5 10	5 19	5 11	5 07	4 52	5 06	5 06	4 42	5 29	4 49
24	4 47	5 10	5 15	5 04	5 05	4 33	5 13	4 56	5 17	5 01	5 22	5 07	5 19
25	5 12	5 56	6 33	6 33	5 54	5 11	6 25	6 44	5 08	4 57	5 23	5 19	5 08
26	4 48	6 03	5 56	4 57	5 28	5 33	5 22	5 43	5 25	5 39	5 39	5 33	5 26
27	4 51	4 50	4 48	4 56	4 52	4 52	4 55	5 19	5 28	5 28	5 25	5 19	5 09
28	5 22	5 41	5 22	5 22	5 22	5 34	5 34	5 25	4 44	5 20	5 24	5 26	5 25
29	5 54	5 10	5 15	5 12	5 27	5 27	5 52	5 17	5 01	5 16	5 43	5 13	5 21
30	4 59	5 17	5 10	4 56	5 11	5 22	5 26	5 13	5 14	5 21	5 35	5 00	5 07
Mean	5 00	5 03	5 06	4 59	5 07	5 09	5 11	5 02	4 56	4 58	4 57	4 56	4 55

NOTE.—Correction applied to original record: For polarity south, + 15; for circle west, − 10; for face east, − 20; total, − 15.

APRIL, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = 64° 43' 50''$

Göttingen hours.											Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
13	14	15	16	17	18	19	20	21	22	23			
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
5 01	5 24	4 48	4 57	4 45	5 26	4 29	4 42	4 42	4 46	4 39	66 14	....	1
4 45	4 51	4 59	5 13	5 15	4 55	5 41	5 34	5 12	5 03	5 09	66 14	....	2
5 00	4 53	5 19	5 51	5 55	5 07	5 47	5 33	5 19	5 14	5 04	66 14	....	3
4 45	4 45	5 14	5 19	5 19	4 58	5 21	5 37	4 38	5 11	4 48	66 14	....	4
4 45	4 51	5 09	5 23	5 19	5 42	5 31	5 14	4 47	5 28	4 57	66 14	....	5
4 16	4 10	4 23	4 30	4 43	4 28	4 15	4 16	4 27	4 40	4 18	64 38	....	6
4 24	4 50	4 16	4 45	4 16	5 24	5 15	5 33	4 19	4 18	4 26	66 34	....	7
4 20	4 25	4 18	4 27	4 54	4 25	4 37	4 26	4 35	4 22	....	66 34	....	8
4 57	4 57	5 02	4 51	5 07	6 07	6 25	4 55	4 45	6 41	4 53	66 04	....	9
4 31	4 29	4 29	4 28	4 35	4 32	4 40	4 50	4 35	4 35	5 09	66 14	....	10
4 22	3 47	4 18	4 38	4 37	4 53	4 25	4 35	4 20	4 55	4 33	66 27	....	11
4 22	4 12	4 31	4 31	4 26	4 31	4 43	4 25	4 15	4 34	4 34	66 41	....	12
4 29	4 40	5 08	5 31	5 18	4 56	4 53	5 07	5 07	4 43	4 45	66 41	....	13
4 52	5 15	5 02	4 47	4 45	4 47	4 50	4 55	4 43	4 42	4 45	66 41	....	14
5 14	4 49	5 13	5 26	5 14	5 00	4 47	4 49	4 52	4 52	4 48	65 59	....	15
5 10	4 44	4 51	4 47	4 45	4 43	4 40	4 37	4 37	4 39	5 06	66 36	....	16
5 19	5 22	5 21	5 00	5 11	5 00	5 03	4 56	4 50	4 42	5 01	66 36	....	17
5 34	5 10	5 19	5 13	5 03	5 16	5 46	5 16	5 16	5 08	4 58	66 36	....	18
5 35	5 41	5 58	6 18	6 22	6 40	5 27	5 45	5 47	5 24	5 38	66 08	....	19
5 18	4 58	5 17	5 11	5 13	5 09	5 16	5 12	5 03	4 58	5 04	66 08	....	20
5 02	5 22	5 12	5 13	5 18	5 23	5 04	5 31	5 32	5 15	5 15	67 11	....	21
5 18	5 21	4 53	4 40	4 38	4 48	4 53	4 49	4 48	4 55	5 33	67 11	....	22
4 43	4 50	4 50	4 45	4 40	4 48	4 42	4 34	4 35	4 50	5 28	66 35	....	23
5 06	5 23	4 56	4 53	4 46	4 45	4 52	4 53	4 44	4 33	4 32	66 35	....	24
5 04	5 30	4 53	5 20	5 18	5 30	5 17	5 01	5 12	5 12	5 00	66 35	....	25
5 05	5 27	5 13	5 05	5 00	5 02	5 02	5 02	5 09	4 47	4 53	66 48	....	26
5 23	5 26	5 23	5 03	5 17	5 30	5 30	4 59	4 55	5 27	5 01	67 00	....	27
5 25	5 54	5 21	5 00	5 00	5 27	4 50	4 46	4 52	5 08	5 21	66 41	....	28
5 29	5 15	5 19	5 08	5 13	5 06	5 14	5 22	5 09	5 09	....	66 43	....	29
5 19	5 19	5 28	5 33	5 02	4 47	4 43	4 55	5 06	4 45	5 18	66 37	....	30
4 58	5 00	5 01	5 04	5 02	5 04	5 04	5 00	4 52	4 58	4 58	....	....	Mean.

MAY, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Day of month.	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
1	5 18	5 16	5 17	5 16	5 04	4 50	4 43	4 57	....	5 14	5 17	5 14	5 03
2	5 17	5 15	5 08	4 55	4 55	5 09	5 00	4 56	4 52	4 49	5 18	5 19	5 31
3	5 20	5 20	5 31	4 52	4 46	4 52	4 56	4 59	4 58	4 52	4 50	4 54	4 51
4	5 09	5 09	4 36	4 41	4 41	5 09	5 14	4 59	5 00	4 50	4 48	4 50	4 45
5	4 50	4 48	4 40	5 17	5 17	5 17	4 57	4 50	4 54	4 48	4 51	4 58	4 55
6	4 44	4 55	4 47	4 01	4 36	4 31	4 43	4 31	4 36	4 36	5 00	5 07	5 12
7	5 04	5 04	4 36	5 08	4 02	4 54	4 54	4 45	4 33	4 21	4 35	4 45	4 37
8	4 41	4 43	4 26	4 26	4 30	4 39	4 27	4 35	4 38	4 45	4 47	4 48	4 51
9	4 50	4 50	4 52	4 49	4 59	5 11	5 17	4 45	4 45	4 41	4 27	4 31	4 47
10	4 46	4 52	5 01	5 17	4 25	4 52	4 52	4 55	4 52	5 04	4 52	4 52	5 02
11	4 46	4 57	4 55	4 53	5 01	4 59	4 57	4 53	4 52	4 54	4 54	5 09	5 00
12	5 12	5 19	5 17	5 30	5 14	5 29	5 34	5 18	4 51	5 31	5 19	4 56	4 56
13	5 09	5 58	5 25	5 38	5 02	5 58	5 22	5 54	5 58	5 40	5 06	5 20	5 31
14	5 13	5 13	5 02	5 11	5 19	5 02	5 32	5 11	4 46	5 14	5 15	5 15	5 31
15	5 11	4 39	4 57	5 10	5 02	4 58	4 59	5 15	5 01	4 55	4 58	4 53	4 47
16	....	4 59	5 06	5 07	4 59	5 12	5 14	5 15	5 11	5 12	5 10	5 14	5 10
17	5 17	5 01	5 01	5 08	4 54	4 43	4 58	4 48	4 48	4 48	4 56	4 51	5 12
18	4 59	5 01	5 13	5 15	4 59	5 14	5 01	4 50	5 06	5 16	5 20	5 11	5 02
19	5 23	5 30	4 40	5 07	4 57	5 06	5 00	5 16	5 17	5 29	5 22	5 02	5 11
20	5 43	5 25	5 20	5 13	5 22	5 05	5 10	5 16	5 16	4 50	4 52	5 20	4 59
21	5 06	4 51	4 46	4 47	4 50	4 49	4 50	5 07	5 19	5 08	4 53	5 31	5 37
22	4 45	4 45	4 41	4 41	4 54	4 50	4 44	4 58	4 58	5 27	5 03	5 08	5 23
23	4 39	4 36	4 38	4 44	4 44	4 42	4 40	5 19	5 07	5 12	5 25	4 55	5 00
24	4 33	4 33	4 28	4 30	4 37	4 37	4 39	4 47	4 35	5 04	5 02	4 37	4 50
25	4 55	4 38	4 53	5 05	4 04	4 59	4 56	5 17	5 17	5 17	5 17	5 11	4 57
26	4 49	4 48	4 49	4 50	4 43	4 39	4 36	5 20	5 13	5 29	4 37	5 00	4 47
27	4 38	4 40	4 34	4 46	4 46	4 46	4 36	4 36	4 55	5 01	4 38	4 34	4 34
28	5 15	5 06	5 06	5 13	5 07	5 12	5 12	5 15	5 19	5 19	5 15	5 15	5 05
29	5 18	5 01	4 58	5 03	5 03	5 14	5 18	5 00	4 56	4 55	4 5[illegible]	4 59	4 45
30	5 03	5 03	5 05	5 33	5 23	5 10	5 17	5 14	5 04	5 00	5 00	4 57	4 59
31	4 53	4 53	4 45	4 52	4 52	4 52	4 42	4 36	4 38	4 38	4 36	4 40	4 46
Mean	5 01	5 00	4 55	5 00	4 53	5 00	4 59	5 01	4 59	5 03	4 59	5 00	5 01

NOTE.—Correction applied to original record: −15′, as in preceding month.

OCTOBER, 1882, TO JUNE, 1883.

Recapitulation of monthly means of hourly values of dips, Fort Conger, Lady Franklin Bay, Grinnell Land.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50'' = -4^h 18^m 55.3^s$ (or $4^h 58^m 41.5^s$ W. of Göttingen).

	Göttingen hours.												
	0	1	2	3	4	5	6	7	8	9	10	11	Noon.
1882.	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
October	4 58	4 59	4 59	5 06	5 05	5 06	5 08	5 11	5 04	5 01	5 03	5 00	4 59
November	4 53	4 57	4 53	4 51	4 52	4 52	4 53	4 59	4 59	4 59	5 02	5 04	5 02
December	4 56	5 00	5 04	5 07	5 05	5 00	5 01	5 01	5 02	5 01	4 58	5 01	5 07
1883.													
January	5 01	5 02	5 02	5 01	5 05	5 00	5 00	5 01	4 59	5 01	5 00	4 58	5 00
February	5 00	5 00	4 56	5 01	5 01	4 58	5 02	5 00	5 02	5 02	5 02	5 03	5 03
March	5 06	5 04	5 01	5 02	5 02	5 02	4 58	5 02	5 00	5 03	5 03	5 03	5 02
April	5 00	5 03	5 06	4 59	5 07	5 09	5 11	5 02	4 56	4 58	4 57	4 56	4 55
May	5 01	5 00	4 55	5 00	4 53	5 00	4 59	5 01	4 59	5 03	4 59	5 00	5 01
Weighted mean	4 59	5 01	4 59	5 00	5 01	5 00	5 01	5 01	5 00	5 01	5 00	5 01	5 01
	h. m.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*
Local time	19 01	20 01	21 01	22 01	23 01	0 01	1 01	2 01	3 01	4 01	5 01	6 01	7 01

MAY, 1883.

Magnetic dip, Fort Conger, Lady Franklin Bay, Grinnell Land. (*Dip-circle No.* 19. *Needle No.* 2)—Continued.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50''$

Göttingen hours. 13	14	15	16	17	18	19	20	21	22	23	Reading of magnetic meridian.	Setting of azimuth circle.	Day of month.
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
5 29	4 51	5 13	5 16	5 30	5 10	4 46	4 46	5 00	5 14	5 00	65 16	....	1
5 21	5 15	5 00	4 59	4 56	4 55	5 01	5 05	5 15	5 23	4 52	65 47	....	2
4 50	4 51	4 59	5 05	5 00	5 21	5 02	5 14	5 03	5 17	5 09	65 50	....	3
4 47	4 47	5 23	5 19	5 31	5 10	5 05	5 15	5 06	5 08	4 50	66 42	....	4
4 55	4 56	5 10	5 26	5 26	5 15	5 23	5 05	4 59	5 06	5 10	66 24	....	5
5 12	4 54	4 56	4 59	5 01	5 14	5 15	5 17	5 09	4 48	5 02	66 00	....	6
4 31	4 41	4 45	4 41	4 40	4 51	5 00	5 03	4 54	4 57	4 53	66 00	....	7
4 32	4 39	4 28	4 33	4 43	4 20	4 32	5 10	4 41	4 38	4 39	67 28	....	8
4 30	4 27	4 37	4 40	4 40	4 42	4 44	4 47	4 47	4 55	4 38	66 23	....	9
5 00	5 25	5 25	5 25	5 04	5 32	5 09	4 43	4 51	4 50	4 51	66 50	....	10
5 12	5 20	5 22	5 40	4 52	5 20	4 58	5 18	5 18	5 27	4 58	67 12	....	11
4 52	4 39	4 52	5 33	5 24	4 55	4 35	5 40	5 19	5 23	5 14	67 55	....	12
5 39	5 11	5 04	4 51	5 04	5 00	4 59	5 02	4 58	5 02	5 33	66 52	....	13
5 18	5 26	5 35	5 06	5 06	5 18	5 09	5 01	5 04	5 11	5 11	65 16	....	14
5 35	4 40	4 59	5 21	5 26	5 15	5 15	5 05	4 49	4 45	4 46	65 52	....	15
5 20	5 04	5 13	4 59	4 59	5 04	4 53	4 53	4 50	4 50	5 29	67 00	....	16
5 17	5 11	5 02	4 45	4 45	5 18	5 18	5 09	4 42	4 52	5 06	67 20	....	17
5 18	5 15	5 04	5 19	4 04	5 04	5 17	5 02	5 02	4 51	5 01	65 57	....	18
5 17	5 02	5 02	4 54	4 52	5 01	5 09	5 13	5 02	4 56	5 17	66 58	....	19
5 02	....	5 17	5 20	5 20	5 08	4 58	5 07	5 07	5 07	5 16	65 58	....	20
5 27	5 16	5 20	4 55	4 57	5 17	5 14	5 14	5 08	5 08	5 04	66 00	....	21
5 14	5 28	5 17	5 13	5 33	5 22	5 02	5 11	5 02	5 02	4 49	65 35	....	22
4 46	5 17	5 15	5 19	5 22	5 01	5 10	5 00	5 08	4 51	4 42	66 05	....	23
5 03	4 52	5 18	4 44	5 15	4 50	4 47	5 23	5 23	5 03	4 55	66 25	....	24
4 47	5 01	5 14	5 14	5 18	5 02	4 53	4 44	4 55	4 59	4 57	66 20	....	25
5 07	5 17	5 05	5 13	5 02	5 14	5 24	5 12	5 28	5 10	5 05	66 22	....	26
4 39	4 34	4 39	4 48	4 39	5 07	5 14	4 39	4 51	4 56	4 49	65 12	....	27
5 09	5 07	5 16	4 47	5 08	5 15	5 21	4 57	5 23	5 13	5 07	65 45	....	28
4 53	4 55	5 10	5 01	5 02	5 16	5 23	5 08	5 16	5 17	5 12	66 19	....	29
4 59	5 08	5 20	5 11	5 10	5 20	5 15	5 28	5 02	5 21	5 14	66 19	....	30
4 50	4 50	5 04	5 07	5 14	5 16	5 18	5 15	5 19	5 16	5 05	65 56	....	31
5 03	5 01	5 07	5 05	5 04	5 08	5 05	5 06	5 04	5 04	5 02	......	....	Mean.

OCTOBER, 1882, TO JUNE, 1883.

Recapitulation of monthly means of hourly values of dips, Fort Conger, Lady Franklin Bay, Grinnell Land.

80° + tabular quantity. $\phi = 81° 44' 00''$ $\lambda = -64° 43' 50'' = -4^h\ 18^m\ 55.3^s$ (or $4^h\ 58^m\ 41.5^s$ W. of Göttingen).

Göttingen hours. 13	14	15	16	17	18	19	20	21	22	23	Monthly mean.	Weight.	
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′		1882.
5 08	5 04	5 04	5 00	4 59	4 58	4 59	5 04	5 01	4 57	4 55	4 65.6	¼	October.
5 03	5 00	5 00	5 01	5 00	4 58	4 56	5 00	4 56	4 54	4 57	4 57.5	1	November.
5 02	5 02	5 03	5 00	4 59	4 59	5 01	5 01	4 59	5 00	5 01	4 61.3	1	December.
													1883.
5 04	5 00	5 01	5 00	5 02	5 00	5 01	5 03	5 00	4 56	5 02	4 60.8	1	January.
5 04	5 05	5 00	5 00	5 01	5 05	4 56	4 57	4 58	4 58	4 59	4 60.6	1	February.
5 03	5 04	5 09	5 10	5 09	5 08	5 05	5 09	5 07	5 08	5 03	4 64.3	1	March.
4 58	5 00	5 01	5 04	5 02	5 04	5 04	5 00	4 52	4 58	4 58	4 60.9	1	April.
5 03	5 01	5 07	5 05	5 04	5 08	5 05	5 06	5 04	5 04	5 02	4 61.6	1	May.
5 03	5 02	5 03	5 03	5 02	5 03	5 01	5 02	4 59	5 00	5 00	5 01.2	....	Weighted mean.
h. m. 8 01	*h. m.* 9 01	*h. m.* 10 01	*h. m.* 11 01	*h. m.* 12 01	*h. m.* 13 01	*h. m.* 14 01	*h. m.* 15 01	*h. m.* 16 01	*h. m.* 17 01	*h. m.* 18 01	......	....	Local time.

The final result for the magnetic dip at Fort Conger for the epoch February, 1883, is therefore 85° 01′ N.; and comparing this result with the value found in 1875–'76 by the officers of the *Discovery*, viz, 84° 50′, it would appear that the dip has been on the *increase* between these epochs at an average *annual* rate of 1.6′; yet this result should be regarded a weak one.

With still less certainty can we deduce the law of the diurnal variation of the dip, notwithstanding that each hourly value is derived from more than 200 observations; this inequality seems at any rate small, perhaps of 4′ or 5′ range, with a maximum value about two hours before (local) noon and a minimum about four hours before midnight. If there be a double progression in the diurnal variation our series is not competent to verify it, the instrumental means employed being inadequate to yield such close results.

With the dip $\theta = 85° 01'$ and the horizontal component H of the magnetic intensity = 1.118 we derive the vertical component V and total force F, as follows:

At Fort Conger, for epoch 1882.2:

Intensity.	H	V	F
In British units	1.118	12.822	12.870
In Gaussian units	0.5155	5.912	5.934
In C. G. S. units (dynes)	0.05155	0.5912	0.5934

This would indicate an increase of the total intensity since 1875–'76 of 12.870—12.559 or 0.311 British units of force (.0143 dynes) if we take the results by the magnetometer of the British expedition; but if we take a mean between this and the results by the Lloyd dip-needles of that expedition we get an annual increase of $\frac{12.870 - 12.392}{6} = 0.080$ British units or 0.0037 dynes.

NOTE ON AURORAL DISPLAYS IN CONNECTION WITH MAGNETIC OBSERVATIONS.

"Three Years of Arctic Service" contains many references to auroras, and in Appendix XIII, Vol. II, pp. 410–418, several descriptions are given of the auroral displays accompanying the great magnetic storm of November 15–19, 1882,* and page 418 of Vol. II contains a list showing dates on which auroras were observed by the expedition at Fort Conger and on the retreat from the station. The dates given below were transferred from that page, but subsequently revised from data deciphered in letter-press copy. On August 18, 1881, the party commenced preparations for the construction of their quarters, and occupied them up to August 9, 1883, on which day the station was abandoned. The last day of sunlight was noted on October 15, 1881, and the sun reappeared February 28, 1882.

Dates on which auroras were observed at Fort Conger.

Year.	Month.	Days of month.	Remarks.	Year.	Month.	Days of month.	Remarks.
1881	Sept.	21.	During the first winter there were noted 37 auroras in 22 weeks, or nearly 2 per week.	1882	Oct.	2 to 4, incl., 6, 7, 9, 10, 22 to 24, incl.	During the second winter there were noted 67 auroras in 21 weeks, or 3 per week.
1881	Oct.	16, 19, 22, 25, 26, 28 to 30, incl.		1882	Nov.	2, 4, 6, 7, 9 to 11, incl., 13 to 19, incl., 20, 21, 23, 24, 25, 28, 29.	
1881	Nov.	10, 14, 20, 23 to 25, incl., 27, 28.					
1881	Dec.	5, 11, 14, 17, 19, 20.		1882	Dec.	1 to 12, incl., 14 to 17, incl., 28, 29.	
1882	Jan.	10, 11, 19, 21 to 23, incl.		1883	Jan.	1, 3 to 5, incl., 7 to 10, incl., 13, 16, 27.	
1882	Feb.	1, 11, 15, 17, 19 to 21, incl., 23.		1883	Feb.	3, 5, 10, 14, 18, 24, 27.	

NOTES FROM "THREE YEARS OF ARCTIC SERVICE."

Lieutenant Greely remarks ("Three Years of Arctic Service," Vol. I, p. 158) that the arch was the most common form after the streamer during the auroral displays of the first winter, and that magnetic disturbances were rare during colorless and slowly changing forms. "The aurora of October 28, 1881, although of short duration, was marked by heavy magnetical disturbances,

*The year 1883, as given in "Three Years of Arctic Service", is a clerical error. It must be regretted that by an unfortunate mistake the original record of auroras was left behind at Fort Conger, and that the letter-press copy of the duplicate record was rendered very illegible through unavoidable exposure to dampness at Camp Clay and Cape Sabine, so that full descriptions are not always decipherable.

which attained the maximum eight minutes after the last ray faded." The aurora of November 24, 1881, was accompanied by magnetic disturbances. "In the display of January 19, 1882, there was a beautiful auroral arch, from horizon to horizon, in the magnetic meridian, during the presence of which the needle was greatly disturbed, swinging repeatedly off the scale." "The aurora of January 21, 1882, was wonderful beyond description; * * * despite the remarkable duration and extent of the aurora, the magnet was but slightly disturbed." The aurora of February 1, 1882, was unaccompanied by magnetic disturbances. From Vol. II, p. 8, we copy: "From November 14 to 19 (1882) the wonderful magnetic storm, which was general throughout the world, prevailed at Fort Conger perhaps with greater intensity than at any other point. The auroral displays were magnificent on those days, and are imperfectly recorded in an appendix (No. XIII, above referred to). The storm culminated on the 17th, on which date the magnetic needle ranged in variation considerably over 19°, and a brilliant aurora was visible continuously for nine hours." The extreme range in the angular motion of the needle between the 16th and 17th of nearly 20½° has already been noted. In Vol. II, p. 411, Lieutenant Greely remarks on the behavior of the magnet during this aurora: "November 17.—Sergeant Gardiner called me at 5 a. m. to observe a very brilliant and remarkable aurora. He said that its greatest beauty had vanished before I saw it. * * * A very marked magnetic disturbance appeared at the same time, and I ordered five-minute readings to be taken. * * * Lieutenant Lockwood assisted in the work to-day. The five-minute readings were continued throughout the day. * * * November 18.—The magnetic disturbance still continues. Five-minute readings were made until 9 p. m. (Washington mean time), when the disturbance apparently ceased. * * * November 19.—Magnetic disturbance again occurred, and five-minute readings were kept up from 5 p. m. Aurora appeared shortly after the disturbance of the magnet commenced. * * * November 20.—Five-minute readings continued the greater part of the day, owing to the recurrring magnetic disturbance."

COLLECTION OF MAGNETIC DECLINATIONS OBSERVED DURING GEOGRAPHICAL EXPLORATIONS.

The results interspersed in Lieutenant Greely's Narrative* are here collected for convenience of reference. The latitude and longitude of the stations when not given were supplied by means of the map following page 36, Vol. II of the Narrative. The true azimuths were obtained from bearings of the sun.

Locality.	Latitude.	West longitude.	Date of observation.	West declination.	Observer.	Reference.
	° ′	° ′		° ′		
Camp 3, near Devil's Head	81 47	66 16	May 27, 1882	102 10	Sergeant Israel	Vol. I, p. 358
Between Camps 2 and 3, near Lake Rogers.	81 51	67 50	June 27, 1882	103 30	Lieutenant Greely	Vol. I, p. 373
At Camp 6, on Cobb River, shore of Lake Hazen.	81 45	71 15	June 29, 1882	108	do	Vol. I, p. 387
Camp 11, north of Mount Arthur	81 20	74 10	July 4, 1882	114	do	Vol. I, p. 398
Grinnell Land	81 00	70 41	May 2, 1883	111 55	Lieutenant Lockwood and Sergeant Brainard.	MS. record.
Do	81 08	73 41	May 10, 1883	108 13	do	Do.
Do	81 05	74 41	May 11, 1883	112 20	do	Do.
Furthest Camp, south shore of Greely Fiord.	80 48.6	78 26	May 14, 15, 1883	115 14	do	Vol. II, p. 36
On ice, off Cape Camperdown	79 00.6	74 45	Sept. 7, 1883, 5ʰ p. m.	105 09	Sergeant Israel	Vol. II, p. 119

To have our final results at Fort Conger ready for comparison or combination with other older results in this locality they are herewith repeated:

[D = declination; θ = dip; H = horizontal; F = total force.]

Locality.	Latitude.	West longitude.	Date of observation.	West declination, dip and intensity.	Remarks.
	° ′	° ′			
Fort Conger, magnetic observatory	81 44.0	64 43.8	Sept. 1, 1881, to July, 1882; Aug., 1882, to July, 1883, inclusive.	$D = 100° 34'$	Lieutenant Greely, Sergeant Israel, and other members of the Expedition.
Do	81 44.0	64 43.8	Oct., 1882, to May, 1883, inclusive.	$\theta = 85° 01'$	
Do	81 44.0	64 43.8	Sept., 1881, to Aug., 1883	$H = 1.118$	Epoch for D, 1883.0.
Do	81 44.0	64 43.8	Sept., 1881, to Aug., 1883	$F = 12.870$	Epoch for θ, H, and F, 1882.2.

*Three Years of Arctic Service, an account of the Lady Franklin Bay Expedition of 1881–'84, and the attainment of the Farthest North. By A. W. Greely, lieutenant U. S. A. Two vols. New York, Charles Scribner's Sons, 1886.

For convenience of reference I append the following general collection of magnetic results, covering the region north of the head of Baffin's Bay and entrance to Smith Strait from latitude 77° northward, taken from the several publications of the American Arctic Expeditions, viz:

Dr. E. K. Kane, 1853–'54–'55, Smithsonian Contributions to Knowledge, Washington, 1858.

Dr. I. I. Hayes, 1860–'61, Smithsonian Contributions to Knowledge, No. 196, Washington, 1867.

Capt. C. F. Hall, 1871–'72–'73, Scientific Results of the U. S. Arctic Expd'n. Vol. I, Physical Observations, by Dr. E. Bessels,* Washington, 1876.

The Greely Relief Expedition, U. S. N., 1884. Naval Professional Papers, No. 19. The Variation of the Compass, Washington, 1886.

And from the results of the observations made by the British Expedition under Capt. G. S. Nares, 1875–'76, Proceedings of the Royal Society, No. 196, 1879, paper by Staff-Commander E. W. Creak, R. N.†

[D = declination; θ = dip; H = horizontal; F = total force.]

Locality.	Latitude.	West longitude.	Date.	Magnetic results.	Observer.
	° ′	° ′			
Van Rensselaer Harbor, Fern Rock Observatory.	78 37	70 53	June 9, 26, 1854	$D = 108° 12'$	E. K. Kane and A. Sonntag.
Do	78 37	70 53	Jan. to June, 1854; Apr. to May, 1855.	$\theta = 84° 45.8'$	Do.
Do	78 37	70 53	Jan. to June, 1854	$H = 1.139$	Do.
Do	78 37	70 53	May, 1855	$F = 12.48$	Do.
Hakluyt Island, off Whale Sound[1]	77 20	72 30	June 21, 1855	$H = 1.344$	Do.
Bedeviled Reach, Cape Grinnell	78 34	71 34	Aug. 12, 1853	$\theta = 85° 08'$	Do.
Marshall Bay	78 51	68 54	Sept. 3, 1853	$\theta = 84° 49'$	Do.
Port Foulke, Observatory Hartstene Bay	78 18	73 00	July, 1861	$D = 111° 40'$	I. I. Hayes, H. G. Radcliff.
Do	78 18	73 00	do	$\theta = 85° 02'$	H. G. Radcliff.
Do	78 18	73 00	do	$H = 1.084$	Do.
Do	78 18	73 00	do	$F = 12.521$	Do.
Netlik, Whale Sound	77 08	71 22	Aug., 1861	$D = 106° 49'$	H. G. Radcliff and S. J. McCormick.
Do	77 08	71 22	do	$\theta = 84° 58'$	H. G. Radcliff.
Do	77 08	71 22	do	$H = 1.110$	Do.
Northumberland Island	77 21	72 20	do	$D = 106° 00'$	H. G. Radcliff. (?)
Starr Island, Smith Strait	78 18	73 06	Oct., 1860	$D = 109° 45'$	A. Sonntag.
Cairn Point, Smith Strait	78 31	72 59	Apr., 1861	$D = 110° 09'$	I. I. Hayes and S. J. McCormick.
Littleton Island, Smith Strait	78 22	73 30	July, 1861	$\theta = 84° 43'$	H. G. Radcliff.
Gale Point, Cadogan Inlet[1]	78 13	76 08	do	$\theta = 85° 21'$	Do.
Hakluyt Island, off Whale Sound[1]	77 20	72 30	Aug., 1861	$\theta = 85° 00'$	Do.
Last Camp, Smith Strait[2]	78 38	71 48	May, 1861	$D = 108° 36'$	I. I. Hayes.
Camp Separation, Kane Basin	78 46	72 08	do	$D = 105° 04'$	Do.
Potato Camp, Kane Basin	78 56	72 30	do	$D = 105° 34'$	Do.
Scouse Camp, Kane Basin	79 19	72 53	do	$D = 112° 06'$	Do.
Cache on floe, Kane Basin	79 20	72 53	do	$D = 113° 52'$	Do.
Cape Hawks[3]	79 33	73 15	do	$D = 115° 38'$	Do.
Foggy Camp, between Cape Frazer and Cape Napoleon.[3]	79 41	71 45	do	$D = 106° 53'$	Do.
Polaris Bay, Hall Land	81 36	62 15	Jan. to May, 1872	$D = 96°$	C. F. Hall and E. Bessels; Bryan and Meyer.
Do	81 36	62 15	do	$\theta = 84° 23'$	E. Bessels.
First Camp, Hall Land	81 35	62 00	Oct. 11, 1871, $2^h 40^m$ p. m.	$D = 95°$	C. F. Hall.
Second Station, Hall Land	81 38	60 30	Oct. 12, 1871, $0^h 42^m$ p. m.	$D = 97.1°$	Do.
Third Station, Hall Land	81 41	58 30	Oct. 13, 1871, noon	$D = 96°$	Do.
Fourth Station, Hall Land	82 00	58 00	Oct. 19, 1871, $7^h 03^m$ p. m.	$D = 100.6°$	Do.
Fifth Station, Hall Land	81 39	58 15	Oct. 23, 1871, $6^h 38^m$ p. m.	$D = 97°$	Do.
Near entrance to Kennedy Channel	80 02	68 45	Aug. 16, 1872, $6^h 15^m$ p. m.	$D = 107° 58'$	F. Meyer.
Kane Basin	79 43	69 15	Aug. 18, 1872, $6^h 23^m$ p. m.	$D = 107° 39'$	Do.
Do	79 36	68 00	Aug. 24, 1872, $6^h 21^m$ p. m.	$D = 107° 49'$	Do.
Do	79 36	68 45	Sept. 5, 1872, $4^h 00^m$ p. m.	$D = 107.2°$	Observer not stated.

[1] Geographical position corrected.

[2] Longitude corrected. (See track on chart in Contributions to Knowledge.)

[3] In consequence of the corrected positions of Foggy Camp and Cape Hawks corresponding corrections were made in the positions, Camp Separation, Potato Camp, Scouse Camp, and Cache. It is my belief (which is shared by Dr. Bessels and by certain members of the Greely Expedition) that on this trip Dr. Hayes did not reach beyond the latitude of Cape Joseph Good ($\phi = 80° 16'$), which he mistook for Cape Lieber. For my reasons for supposing that Dr. Hayes was here stopped by patches of open water at Rawlings Bay on his northern trip in May, 1861, see an article in "Science," Vol. VII, No. 159, February 19, 1886.

* The Results were collated by me with Dr. Bessel's Narrative (in German), "The American North Polar Expedition, by E. Bessels, Leipzig, 1879." Scientific Appendix II.

† The publication of the parliamentary paper, "Results derived from the Arctic Expedition, 1875–'76," session of 1879, is not accessible to me.

[D = declination; θ = dip; H = horizontal; F = total force.]

Locality.	Latitude.	West longitude.	Date.	Magnetic results.	Observer.
	° ′	° ′			
Kane Basin	79 35	69 00	Sept. 6, 1872, $4^h 26^m$ p. m.	$D = 106.5^\circ$	Observer not stated.
Do.	79 30	69 15	Sept. 8, 1872, $4^h 25^m$ p. m.	$D = 105.3^\circ$	Do.
Do.	79 21	70 00	Sept. 14, 1872, $3^h 33^m$ p. m.	$D = 106.3^\circ$	Do.
Do.	79 12	70 30	Sept. 25, 1872, 3^h p. m	$D = 102.6^\circ$	Do.
Van Rensselaer Harbor, Fern Rock Observatory.	78 37	70 53	May 15, 1873, $8^h 07^m$ a. m.	$D = 106.5^\circ$	Bryan.
Port Foulke Observatory	78 18	73 00	May 28, 1873, $9^h 21^m$ a. m. and $6^h 27^m$ p. m.	$D = 110.3^\circ$	Do.
Polaris House, near Life Boat Cove, Smith Strait.	78 23	72 51	May 31 and June 1, 1873, $6^h 26^m$ p. m. and $6^h 20^m$ a. m.	$D = 111.3^\circ$	E. Bessels.
Northumberland Island	77 19	71 45	June 10, 1873, $11^h 23^m$	$D = 104.9^\circ$	Observer not stated.
Floeberg Beach	82 27	61 22	Sept. 10, 11, Dec., 1875; Jan. and Feb., 1876.	$D = 97^\circ 57'$	Capt. A. H. Markham and Lieut. G. A. Giffard, of the *Alert*.
Do.	82 27	61 22	Nov., 1875, to Mar., 1876	$\theta = 84^\circ 42'$	Do.
Do.	82 27	61 22	do	$H = 1.135$[1] $F = 12.284$	Do. Do.
Discovery Bay, observatory on shore	81 44	64 44	Oct., 1875, to Mar., 1876	$D = 101^\circ 44'$	Lieut. R. H. Archer and Lieut. R. B. Fulford, of the *Discovery*.
Do. at site of Fort Conger	81 44	64 44	Sept., 1875, to July, 1876	$\theta = 84^\circ 50'$	Do.
Do	81 44	64 44	Oct., 1875, to July, 1876	$H = 1.119$[1] $F = 12.392$	Do. Do.
Near Port Foulke, Reindeer Point	78 18	73 00	July 28, 1875	$D = 110^\circ 04'$	Officers of the *Alert*.
Hartstene Bay, on ice	78 19	72 56	Aug. 9, 1875	$D = 110^\circ 02'$	Do.
Off East Cape, Franklin Pierce Bay[2]	79 25	74 30	Aug. 11, 1875	$D = 111^\circ 13'$	Do.
Dobbin Bay	79 40	73 06	Aug. 14, 1875	$D = 107^\circ 25'$	Do.
Off Hayes Point, on ice[2]	79 36	72 00	Aug. 16, 1875	$D = 111^\circ 23'$	Do.
On ice, near extreme northerly position, Lincoln Sea.	83 16.5	62 40	May 6, 1876	$D = 102^\circ$	Do.
Do.	83 17.5	62 40	May 8, 1876	$D = 98^\circ$	Do.
Cape Sabine, Smith Strait	78 42	74 20	July 31, 1875	$D = 107^\circ 59'$	Officers of the *Discovery*.
On ice, off Victoria Head	79 16	74 10	Aug. 7, 1875	$D = 110^\circ 18'$	Do.
Cape Prescott[2]	79 26	74 00	Aug. 9, 11, 1875	$D = 110^\circ 16'$	Do.
Dobbin Bay	79 41	72 53	Aug. 14, 1875	$D = 108^\circ 14'$	Do.
Do.	79 41	72 53	Aug. 29, 1876	$D = 109^\circ 01'$	Do.
Do.	79 41	72 53	do	$\theta = 85^\circ 15'$	Do.
On ice, near Cape Collinson	80 03	70 22	Aug. 21, 1875	$D = 106^\circ 01'$	Do.
Hannah Island, Kennedy Channel	81 07	63 53	Aug. 24, 1875	$D = 97^\circ 46'$(?)	Do.
Cape Frazer	79 47	71 19	Aug. 24, 1876	$D = 108^\circ 59'$	Do.
Near Cape Louis Napoleon	79 40	72 05	Aug. 25, 1876	$D = 109^\circ 46'$	Do.
On ice, Walrus Island	79 24	74 45	Sept. 9, 1876	$D = 111^\circ 12'$	Do.
Rawlins Bay	80 21	70 00	Aug. 21, 1876	$\theta = 85^\circ 06'$	Do.
At sea, off entrance to Whale Sound	77 15	71 30	June 25, 1884	$D = 97^\circ 59'$	Lieut. F. H. Crosby, steamer *Bear*.
Do.	77 18	71 58	do	$D = 100^\circ 34'$	Lieut. U. Sebree, steamer *Thetis*.

[1] Mean of results by unifilar instrument and Lloyd intensity needles.
[2] Longitude corrected.

The preceding records afford some means, however scant, of approximating to the annual change of the declination between the period 1853–1883, and supposed the same to have acted uniformly.

We have already shown that at Fort Conger the annual diminution of west declination between 1876.0 and 1883.0 was 10′ nearly.

For Van Rensselaer Harbor we now find an annual diminution between 1854.5 and 1873.4 of 5′, and at Port Foulke between 1861.5 and 1873.4 an annual diminution of 7′; also at Northumberland Island between 1861.6 and 1873.5 an annual diminution of 5′. From these results we may conclude that for the last twenty-five years, at least, the magnetic west declination has been annually decreasing by about 6′ in the region of the Northwater, Smith Strait, and Kane Basin, and that in the region to the north of it and including the Hall Basin this decrease was more nearly 10′ during the past decade.

About July 7, 1616, Bylot and Baffin, when off the entrance to Smith Sound, noted the variation of the compass 56° west. This was probably in latitude 78° and in longitude −74°. The value of this observation can only be estimated after we shall have acquired a knowledge of the secular variation sufficient to fill up the gap of more than two centuries, in order to connect it with modern observations.

In his contribution to terrestrial magnetism, No. XIII (Phil. Trans. Roy. Soc., 1872, pp. 423–424), General Sir Edward Sabine assumes for the Smith Strait region an annual diminution of the dip of 1′ when reducing observed values to his epoch, 1842.5. For this he could have had but slender foundation, but as the result deduced for the period 1875–'83 indicates about 1½′ of annual increase, the inference is that the dip has changed here but very little since the middle of the century.

There are no means of knowing what changes, though supposed slight, the horizontal or total force has undergone during this time.

APPENDIX No. 139[a].

MAGNETIC REDUCTIONS, 1881–82.

Declination of the magnetic needle observed at Fort Conger, Grinnell Land.

[Latitude, 81° 44′ N.; longitude, 64° 45′ W.; at even hours of Göttingen mean time. Instrument (Fauth & Co.) No. 12, U. S. Coast and Geodetic single divisions equal 2.737 minutes; values given

Magnetic variation W., 90°+.	0	1	2	3	4	5	6	7	8	9	10	11
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
Sept. 17, 1881	10 00.5	9 31.9	9 49.5	9 19.2	9 04.7	9 00.8	8 29.7	9 03.8	9 08.3	9 40.5	9 44.2	9 50.8
Sept. 18, 1881	9 28.7	9 34.6	9 28.3	9 23.5	9 24.3	9 29.2	9 32.9	9 18.0	9 27.7	9 26.5	9 28.3	9 23.2
Sept. 19, 1881	10 05.2	9 55.8	9 53.1	10 07.2	9 50.3	10 01.0	9 58.4	9 53.9	9 43.5	9 54.8	9 50.2	9 58.7
Oct. 20, 1881	Broken fiber delayed beginning of observations.						10 14.7	10 08.2	10 13.0	10 39.7	10 18.9	10 26.3
Oct. 21, 1881	10 23.8	10 45.9	10 33.3	10 19.3	10 19.4	10 19.9	10 18.5	10 18.5	10 19.9	10 20.0	10 20.0	10 31.0
Oct. 22, 1881	10 47.0	9 52.6	10 17.7	10 14.3	9 38.9	9 37.0	9 44.0	10 28.2	10 43.4	10 23.1	10 30.3	10 46.9
Oct. 23, 1881	10 47.1	10 34.0	10 22.2	10 35.9	10 22.5	10 35.8						
Nov. 20, 1881	9 53.1	9 57.8	10 01.4	8 57.6	10 18.7	9 22.2	10 10.3	9 32.9	9 58.7	9 52.6	9 45.2	9 56.2
Nov. 21, 1881	9 55.6	9 49.4	9 29.0	9 28.9	9 45.8	9 45.4	9 38.3	9 46.1	9 42.8	9 45.0	9 46.8	9 43.5
Nov. 22, 1881	15 40.4	15 25.0	15 29.8	15 26.3	11 21.2	11 27.1	11 24.2	11 31.0	11 34.7	11 30.9	11 29.8	11 32.4
Dec. 20, 1881	8 55.0	7 49.7	7 37.7	7 23.7	7 12.5	7 04.4	5 53.9	5 54.0	6 48.6	6 32.8	6 43.8	6 28.9
Dec. 21, 1881	9 22.7	9 26.4	9 07.8	8 34.2	9 00.7	8 23.4	8 38.8	8 32.4	8 46.5	8 39.8	8 38.1	8 19.8
Dec. 22, 1881	9 39.0	10 10.2	10 09.1	10 03.2	9 54.3	9 45.3	9 58.6	9 54.8	9 44.8	9 43.5	9 38.5	9 41.9
Jan. 20, 1882	10 52.5	10 12.9	7 42.5	8 31.1	9 03.1	9 19.1	8 53.7	8 04.8	8 09.1	9 00.5	9 32.2	9 53.3
Jan. 21, 1882	Breaks.		10 21.1	10 10.8	Caused by broken fiber.						[a]7 20.5	[a]7 37.8
Jan. 22, 1882	10 28.9	9 20.4	9 14.2	9 26.9	8 51.6	8 35.9	8 46.4	9 28.5	9 00.1	9 04.1	9 17.5	9 17.6
Jan. 23, 1882	8 49.5	8 59.4	9 00.3	8 31.6	9 10.0	9 12.0	9 07.3	9 11.3	9 07.2	8 54.8	8 42.9	9 11.7
Feb. 21, 1882	9 53.8	10 05.9	9 46.6	10 04.5	9 55.5	9 19.6	9 52.2	10 18.2	9 53.9	10 21.8	10 07.2	10 11.4
Feb. 22, 1882	10 24.8	10 56.4	10 25.6	10 31.4	10 26.2	10 17.8	10 32.1	10 36.0	9 50.7	10 22.1	10 29.6	10 33.1
Feb. 23, 1882	10 36.0	10 14.2	10 28.0	9 57.8	10 00.7	10 36.5	9 58.1	10 41.3	10 10.2	10 29.8	10 38.3	10 54.7
Mar. 16, 1882	[a]7 04.7	[a]5 59.4	[a]6 02.4	[a]6 01.4	[a]5 50.8	[a]5 00.0	[a]4 48.0	10 08.9	10 01.1	9 44.9	10 05.3	9 59.4
Mar. 17, 1882	10 08.0	10 14.3	10 09.4	10 03.9	10 16.8	10 15.4	10 05.1	10 11.4	10 24.0	10 23.1	10 21.3	10 34.8
Mar. 18, 1882	10 10.0	10 08.5	10 13.0	10 16.0	10 08.8	10 17.6	10 06.5	10 12.0	9 58.5	10 23.2	10 27.5	10 38.1
Apr. 20, 1882	11 11.7	10 24.6	11 39.2	9 55.2	10 45. .	9 44.9	9 41.8	5 24.9	4 49.8	11 01.3	6 47.9	10 34.1
Apr. 21, 1882	13 04.6	11 11.5	9 00.5	8 18.2	8 00.2	7 33.6	7 41.8	6 53.7	8 13.3	8 17.3	9 00.7	8 48.0
Apr. 22, 1882	11 47.8	9 56.2	9 31.6	9 03.0	9 45.9	8 56.0	8 57.5	8 54.6	9 16.8	10 11.2	9 42.9	8 53.0
May 19, 1882	10 37.9	10 18.5	9 56.1	9 12.0	9 43.8	8 59.4	9 07.5	8 42.7	9 45.3	9 11.6	10 41.1	10 37.1
May 20, 1882	10 09.7	9 05.0	10 48.8	9 30.0	8 57.9	8 33.4	10 10.8	11 02.8	8 33.7	8 58.0	10 10.0	9 05.7
May 21, 1882	10 06.5	9 27.5	10 18.0	10 01.1	10 10.5	10 05.1	9 24.2	10 05.5	10 29.6	10 26.2	9 54.9	10 04.8
June 20, 1882	10 51.9	11 25.3	10 39.9	10 26.5	10 09.3	10 08.0	9 54.2	10 03.5	10 52.8	10 39.1	9 57.9	10 03.4
June 21, 1882	11 11.1	11 51.6	11 16.7	10 14.7	10 04.1	10 13.1	9 55.5	9 48.9	10 08.9	10 04.1	9 38.7	8 40.7
June 22, 1882	10 26.2	9 14.1	11 28.3	10 08.0	9 22.2	8 50.6	9 34.1	9 58.9	9 36.8	9 54.3	10 14.7	11 12.8
Sums	291°	281°	291°	283°	269°	263°	259°	270°	269°	279°	274°	279°
	889.0′	889.6′	785.7′	676.0′	730.0′	769.5′	1011.1′	849.7′	933.7′	896.6′	964.7′	1013.3′
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
Means	10 32.72	10 12.40	10 08.19	9 48.53	9 41.72	9 30.67	9 30.73	9 28.32	9 29.12	9 47.89	9 46.16	9 51.78

NOTE.—Grand mean of all observations (except those interpolated and affected by torsion), 10° 12′ 48.5″. This mean is one minute greater than that derived from the mean of the various hours.

Declination of the magnetic needle observed at Fort Conger, Grinnell Land.

Survey, reads to one minute on two verniers; recorded values are derived from the means of two readings of oscillating needle, made on scale whose are the excess of 90 degrees, and to the west.]

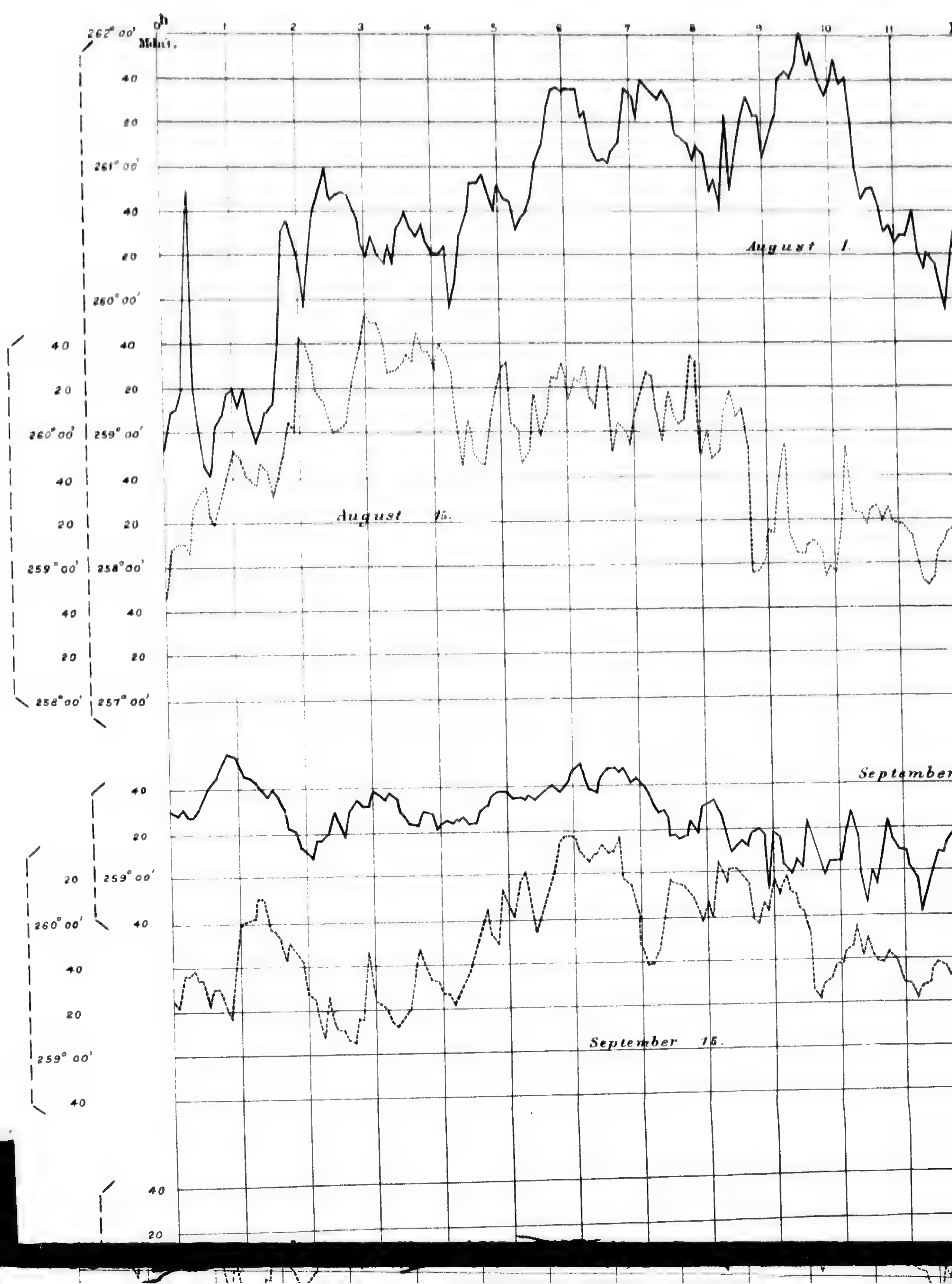
Noon.	1	2	3	4	5	6	7	8	9	10	11	Magnetic variation W., 90° + .
° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′	
9 36.3	10 51.1	10 29.0	10 45.4	10 50.0	10 38.1	10 44.8	10 52.1	10 24.9	9 40.4	9 20.0	8 40.3	Sept. 17, 1881
9 37.2	9 51.7	9 39.8	9 44.0	9 44.8	9 48.1	9 [illegible]	9 56.9	9 46.5	9 42.8	[1]10 01.0	10 19.3	Sept. 18, 1881
10 06.6	10 06.9	10 06.2	10 07.3	10 10.6	10 14.4	10 21.5	10 21.5	9 51.0	9 55.2	10 06.7	9 53.6	Sept. 19, 1881
10 55.6	10 33.8	10 46.9	10 48.8	10 35.5	10 34.1	11 00.8	11 03.7	11 03.8	10 44.8	11 18.0	10 14.7	Oct. 20, 1881
10 49.7	10 49.6	10 37.7	10 40.8	10 52.9	10 43.2	11 35.3	11 40.2	10 43.2	11 54.7	10 46.3	10 39.1	Oct. 21, 1881
10 33.4	10 42.6	10 45.2	11 45.2	10 57.8	11 38.4	11 14.5	11 16.4	10 52.9	11 07.6	11 03.9	10 45.6	Oct. 22, 1881
												Oct. 23, 1881
9 56.2	9 56.5	9 49.8	9 50.3	10 03.6	10 08.9	10 27.3	9 59.8	10 04.3	10 01.8	9 44.2	9 49.5	Nov. 20, 1881
9 44.2	9 38.6	9 36.8	10 00.6	9 35.9	9 34.6	10 19.4	10 29.1	14 44.9	14 44.8	14 34.7	15 41.0	Nov. 21, 1881
11 34.7	11 35.4	11 38.4	11 57.9	11 35.8	11 32.5	11 29.9	11 28.5	11 08.7	11 30.7	11 19.5	11 15.8	Nov. 22, 1881
[2]6 24.6	6 20.3	6 25.8	6 34.1	7 22.3	6 48.1	6 24.8	8 32.3	6 57.5	6 48.0	6 17.5	5 52.3	Dec. 20, 1881
8 31.2	8 36.1	9 04.4	9 18.8	9 09.3	9 39.8	9 30.6	9 45.1	8 40.2	8 48.9	8 30.7	8 33.0	Dec. 21, 1881
9 43.5	9 24.4	9 49.0	9 32.5	9 49.0	9 56.0	9 58.2	9 27.5	9 25.6	9 19.2	9 20.7	9 19.9	Dec. 22, 1881
9 32.9	9 52.5	9 47.0	10 04.9	10 40.1	10 45.0	10 59.7	9 44.9	10 23.3	10 19.6	10 15.8	10 30.6	Jan. 20, 1882
[3]8 04.6	[3]8 09.6	[3]7 44.7	[3]9 44.0	[3]9 51.6	[3]8 39.8	[3]9 16.3	[3]9 44.1	[3]7 20.5	[3]8 04.0	[3]7 35.5	[3]7 25.4	Jan. 21, 1882
9 15.0	9 52.0	9 48.4	10 04.5	10 02.1	9 30.2	11 38.3	10 37.2	9 49.6	9 18.8	10 23.7	9 28.8	Jan. 22, 1882
9 10.6												Jan. 23, 1882
9 40.0	10 30.8	10 23.5	10 26.4	10 09.3	10 03.7	10 31.7	9 57.5	10 10.7	9 55.2	10 10.3	10 20.9	Feb. 21, 1882
10 21.4	11 00.5	10 [illegible]1.4	11 37.4	10 43.3	11 15.8	11 08.8	10 36.0	11 27.4	12 05.2	11 32.2	10 30.7	Feb. 22, 1882
10 40.1	10 59.5	11 00.0	11 02.0	11 02.9	11 19.2	10 15.8	10 29.0	10 42.3	10 52.5	10 27.0	10 16.9	Feb. 23, 1882
11 37.3	11 02.0	12 10.4	10 39.4	10 55.2	11 19.4	11 54.4	12 09.3	[4]10 23.0	9 57.2	9 46.4	9 31.9	Mar. 16, 1882
10 33.7	10 45.[illegible]	10 39.7	10 51.4	10 55.9	10 35.4	10 29.4	10 33.6	11 09 6	11 09.4	10 07.9	10 19.6	Mar. 17, 1882
10 26.1	10 15.2	9 52.2	10 42.6	10 19.1	10 50.5	10 20.5	10 21.7	[illegible] 08.7	10 53.5	10 04.1	10 07.6	Mar. 18, 1882
8 01.3	5 53.7	9 59.9	13 58.2	11 13.4	14 39.7	15 55.5	14 29.3	14 53.0	16 40.5	12 08.8	12 36.3	Apr. 20, 1882
8 33.8	9 30.5	8 37.2	8 50.7	11 30.0	11 39.0	12 33.2	12 16.3	12 36.0	13 15.9	12 05.5	12 02.7	Apr. 21, 1882
9 59.9	9 52.5	10 25.1	10 14.0	11 02.8	10 30.7	10 53.7	10 55.6	11 29.9	11 09.7	11 24.7	10 23.4	Apr. 22, 1882
10 44.7	10 34.8	9 49.5	10 19.8	10 16.5	11 54.1	11 33.3	12 40.6	10 48.0	12 32.2	10 32.7	10 09.3	May 19, 1882
9 39.5	9 43.3	9 38.0	9 41.3	11 23.0	11 42.9	11 23.5	12 43.1	12 24.8	[5]11 58.3	9 41.5	9 20.7	May 20, 1882
9 04.8	9 45.1	10 35.5	10 25.2	11 64.0	10 38.4	11 12.2	11 35.4	11 14.0	12 32.1	11 20.2	12 48.0	May 21, 1882
8 56.9	9 19.3	11 24.3	10 57.1	11 54.7	12 12.3	12 47.5	11 51.6	11 53.9	10 55.9	12 58.6	13 06.0	June 20, 1882
10 05.5	10 04.6	10 47.6	10 22.5	11 44.5	12 29.0	12 16.2	12 06.1	11 39.4	11 45.3	11 58.0	11 31.8	June 21, 1882
10 27.9	10 21.1	10 33.8	11 11.2	10 47.9	12 18.9	11 37.3	12 16.4	12 28.[illegible]	[illegible]2 47.0	10 53.9	10 37.0	June 22, 1882
278°	271°	278°	287°	292°	299°	305°	304°	302°	[illegible]05°	296°	291°	Sums.
982.6′	974.2°	1032.5′	934.3′	872.2′	960.4′	917.0′	976.7′	927.4′	1047.2′	734.5′	826.3′	
° ′	° ′	° ′	° ′	° ′	° °	° ′	° ′	° ′	° ′	° ′	° ′	
9 48.75	9 54.28	10 10.78	10 25.67	10 34.21	10 51.74	11 02.66	11 02.64	11 56.81	11 07.14	10 37.75	10 30.91	Means.

[1] Missed on account of intensity observations; value interpolated.
[2] Missed; cause uncertain; value interpolated.
[3] Affected by torsion; not included in means.
[4] Made 13 minutes late.
[5] Made 8 minutes late.

1882.

PLATE I.

262° 00' 0h 1 2 19 20 21 22 23 24h


0h
Mdnt.
1
2
3
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8
9
10
11
262° 00'
40
20
261° 00'
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260° 00'
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259° 00'
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258° 00'
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257° 00'
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20
260° 00'
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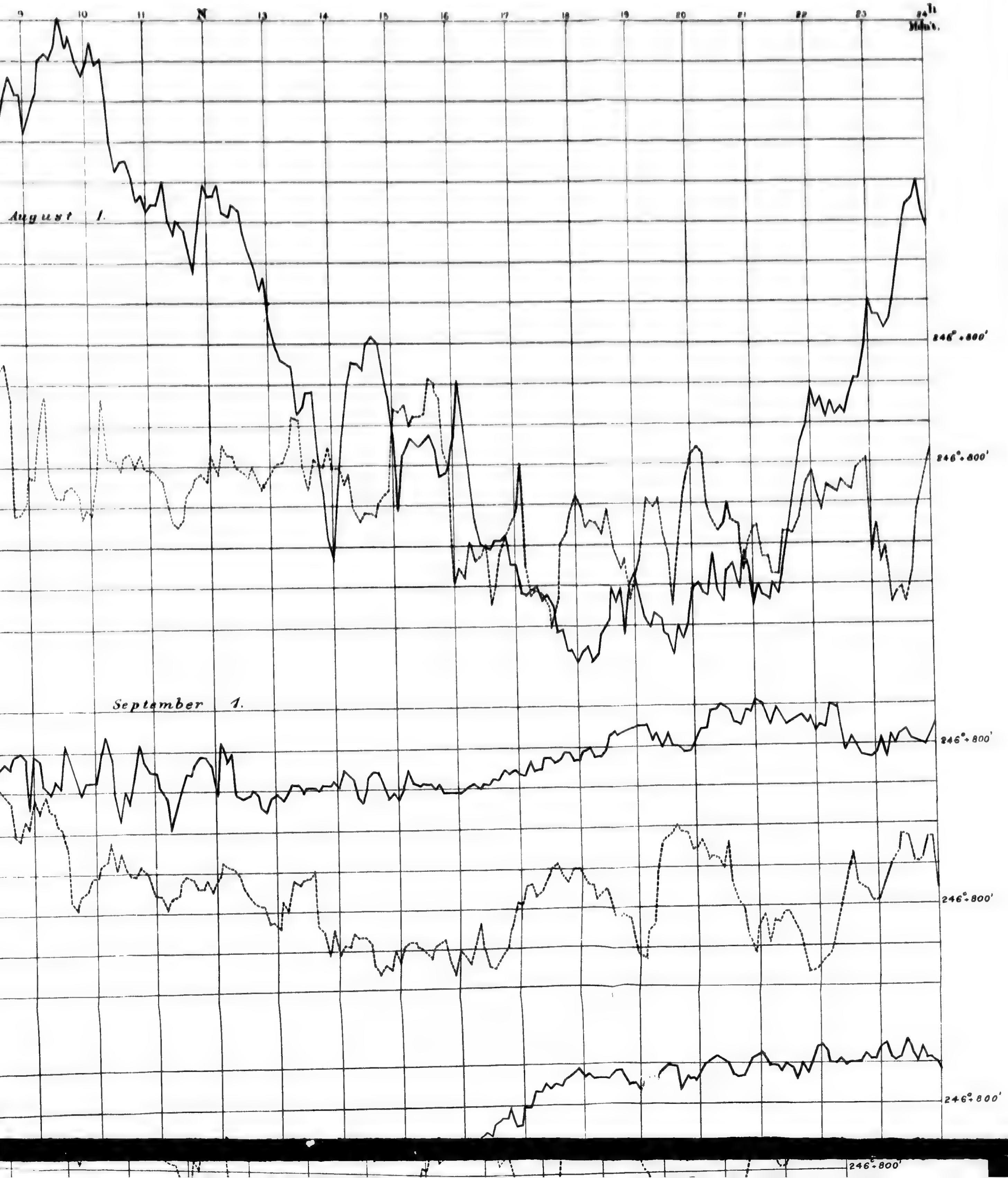
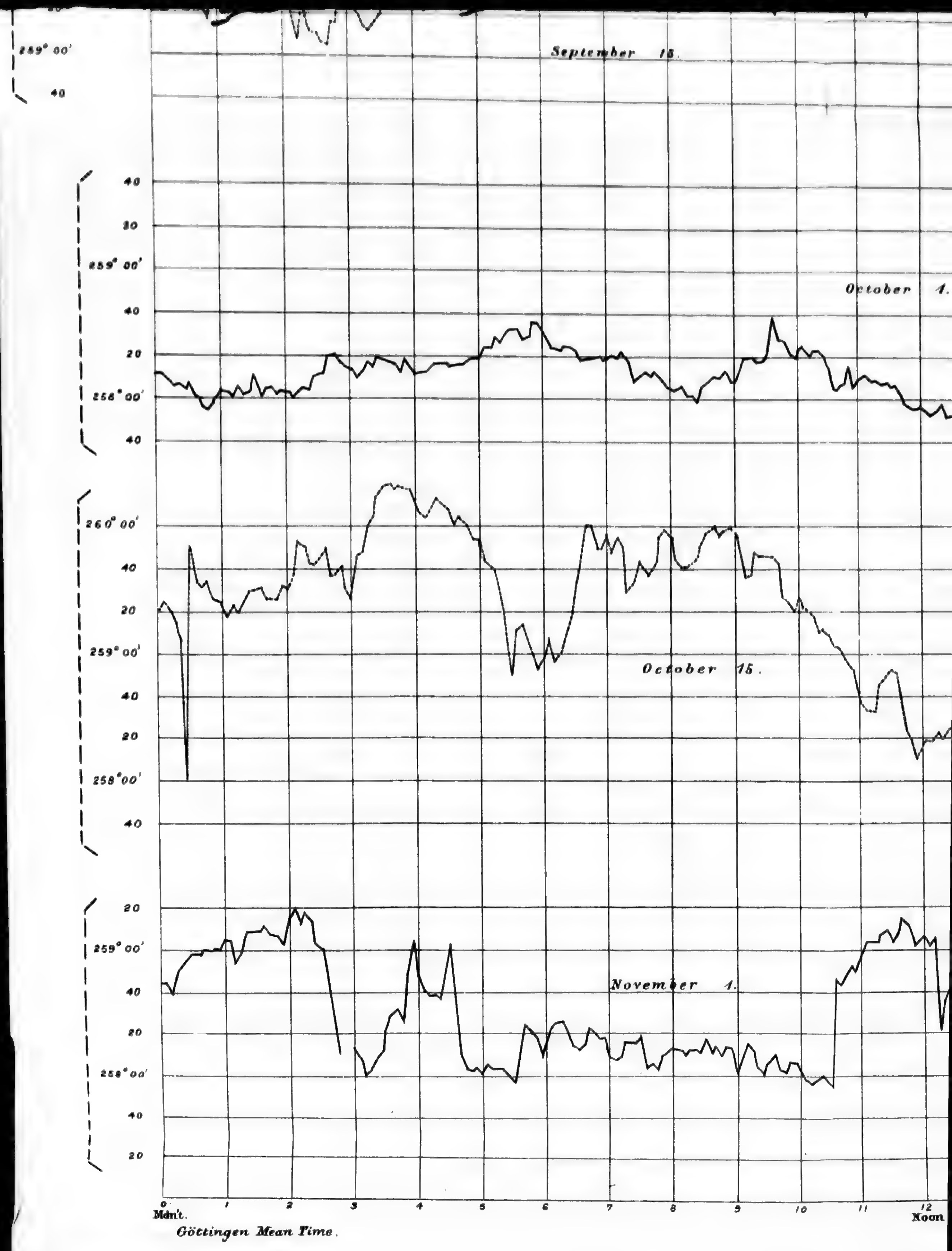
20
259° 00'
40
20
258° 00'
August 1.
August 15.
September
40
20
259° 00'
40
20
260° 00'
40
20
259° 00'
40
September 15.
40
20

AY OBSERVATIONS. FORT CONGER, GRINNELL LAND.
MAGNETIC DECLINATION, EAST.

PLATE I.




September 18.
259° 00'
40
October 1.
40
30
259° 00'
40
20
258° 00'
40
October 15.
260° 00'
40
20
259° 00'
40
20
258° 00'
40
November 1.
20
259° 00'
40
20
258° 00'
40
20
0 Mdn't.
1
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6
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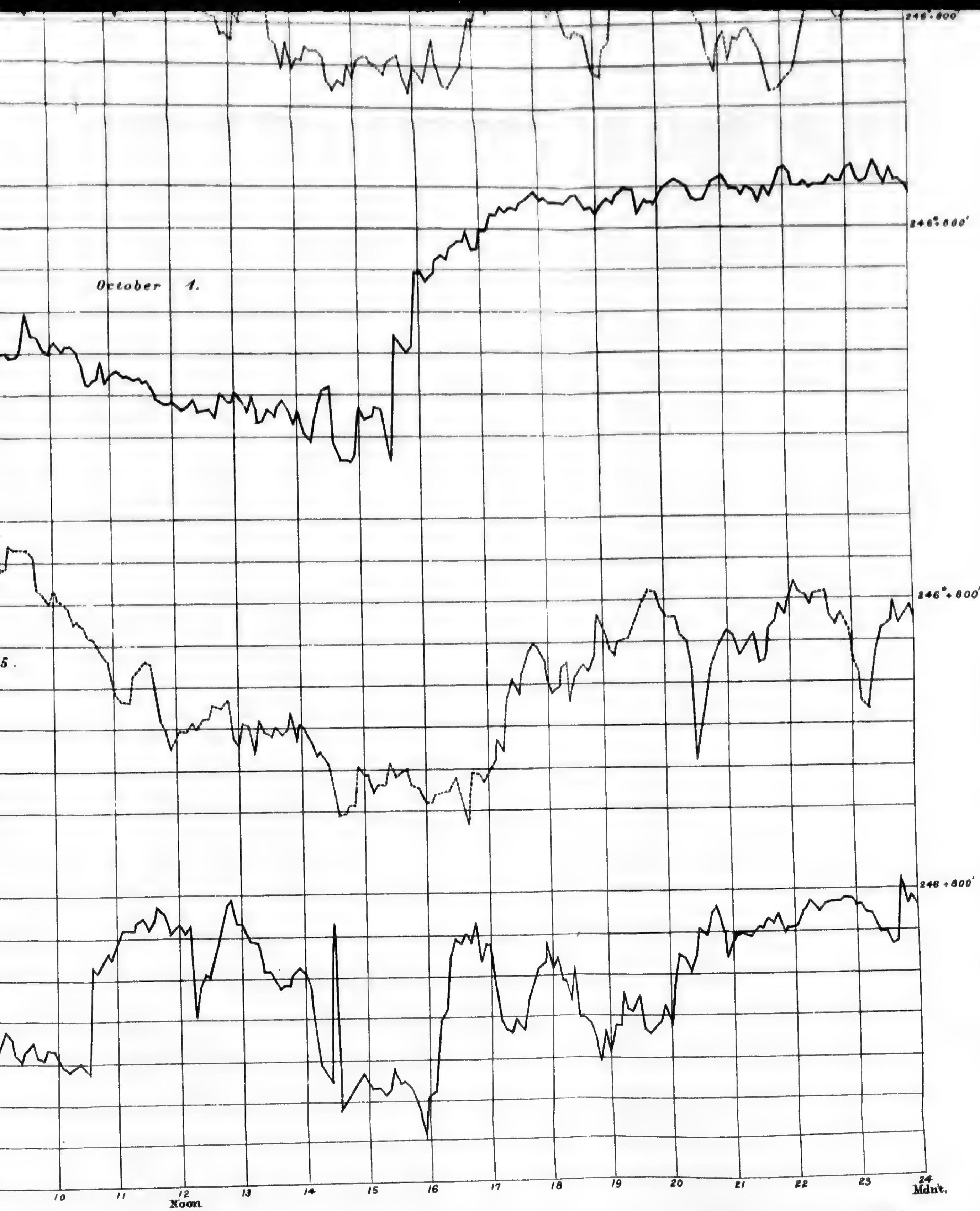
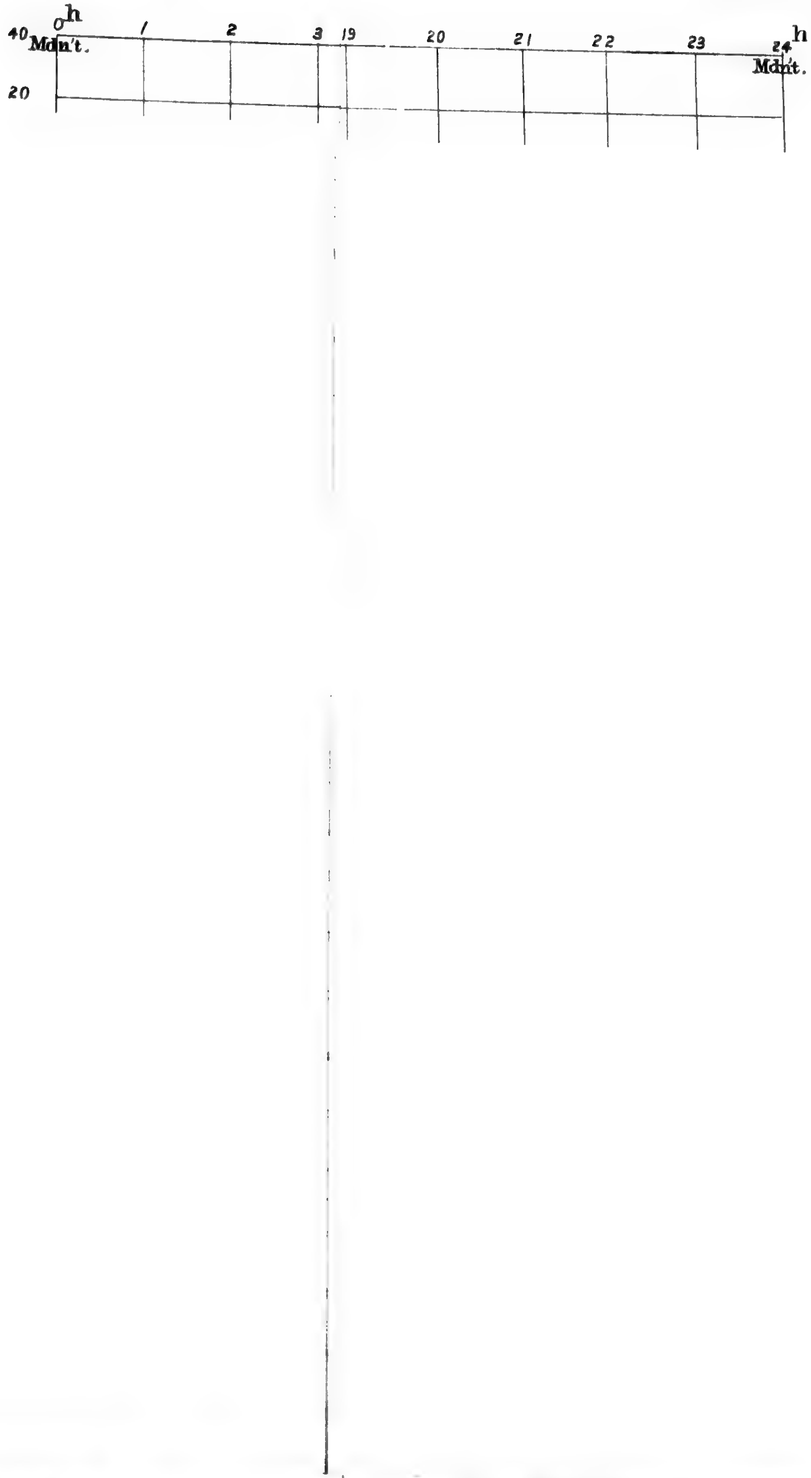
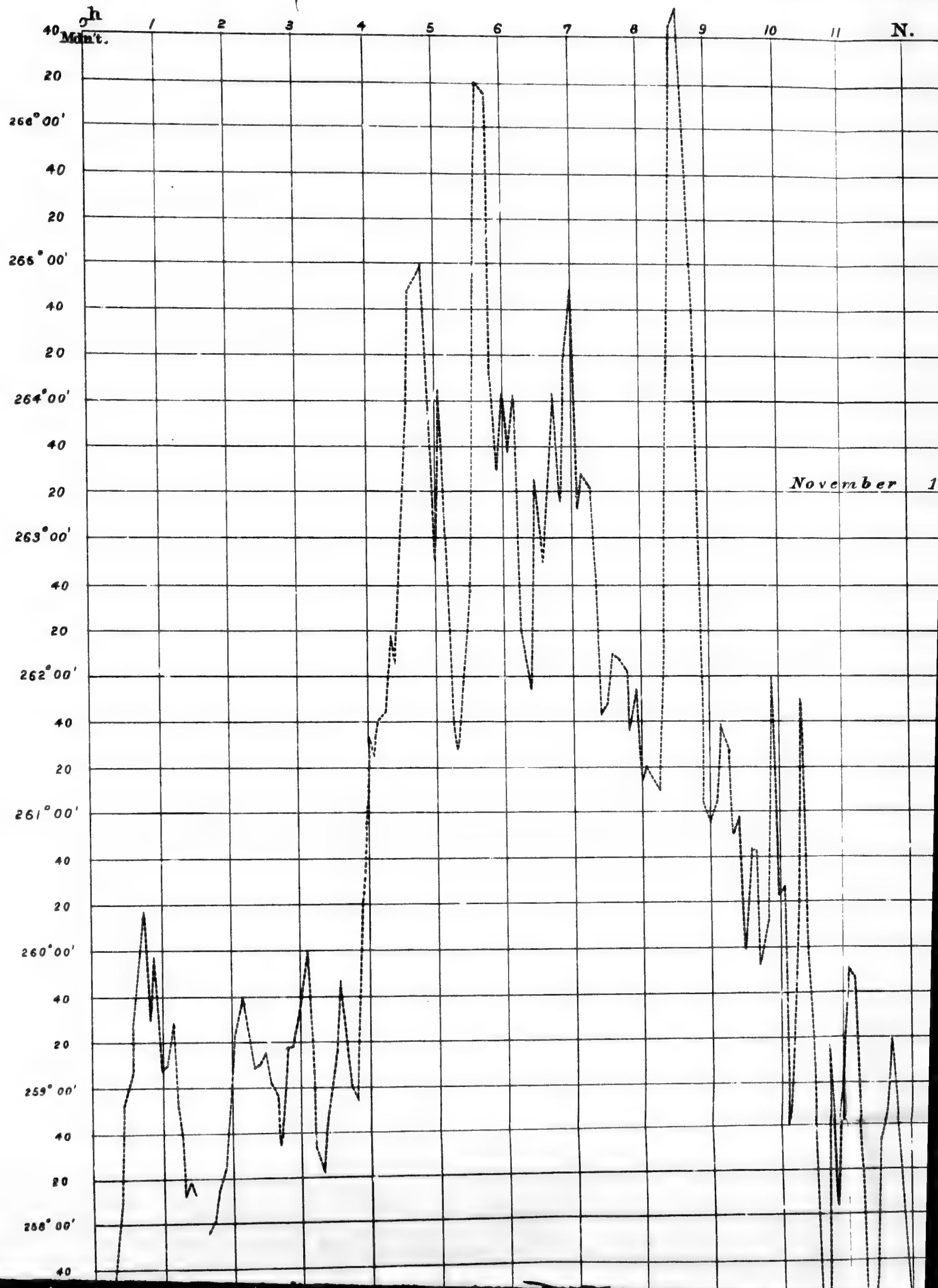
8
9
10
11
12 Noon
Göttingen Mean Time.

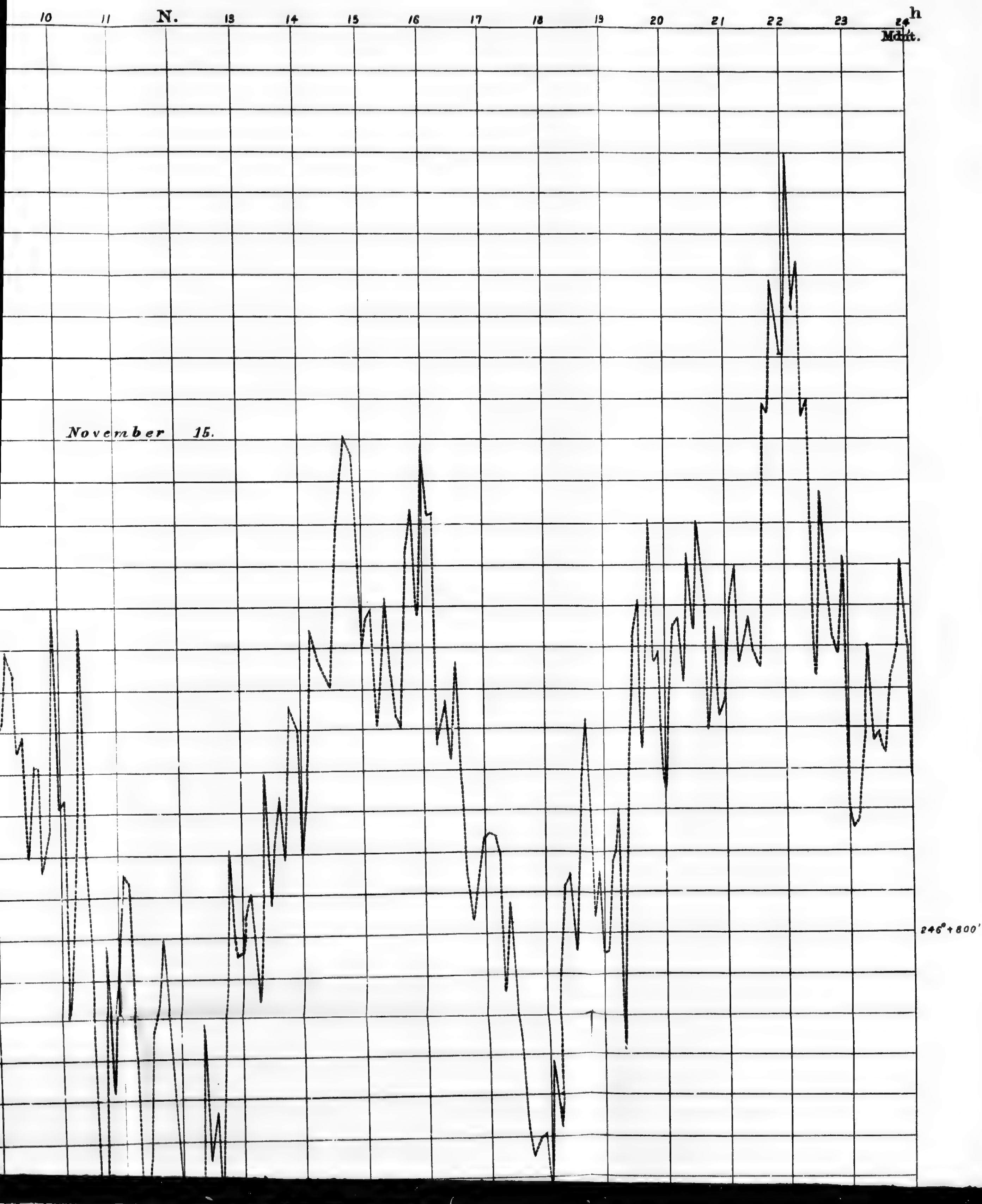


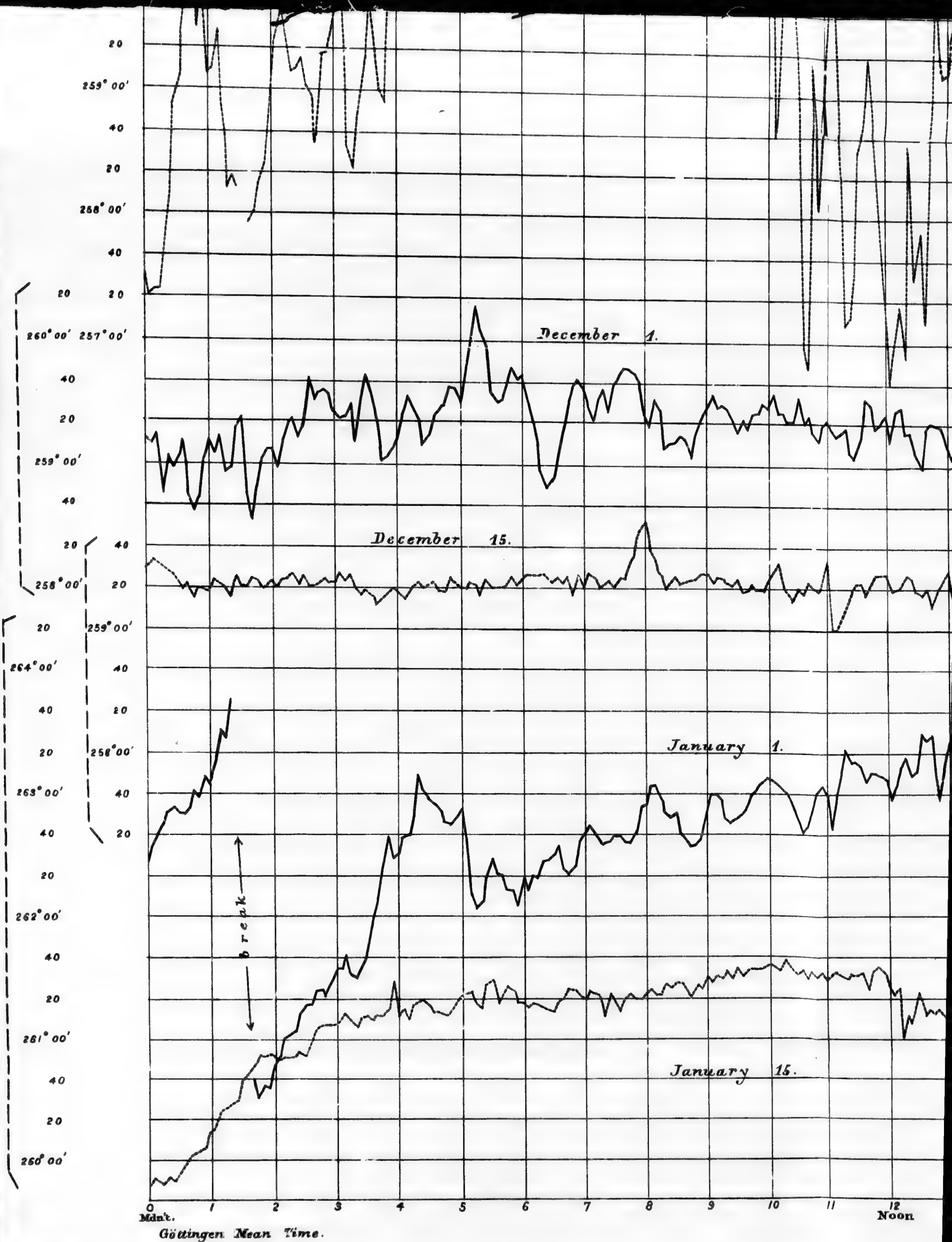
A. Ziwet fecit; Oct. 1886.

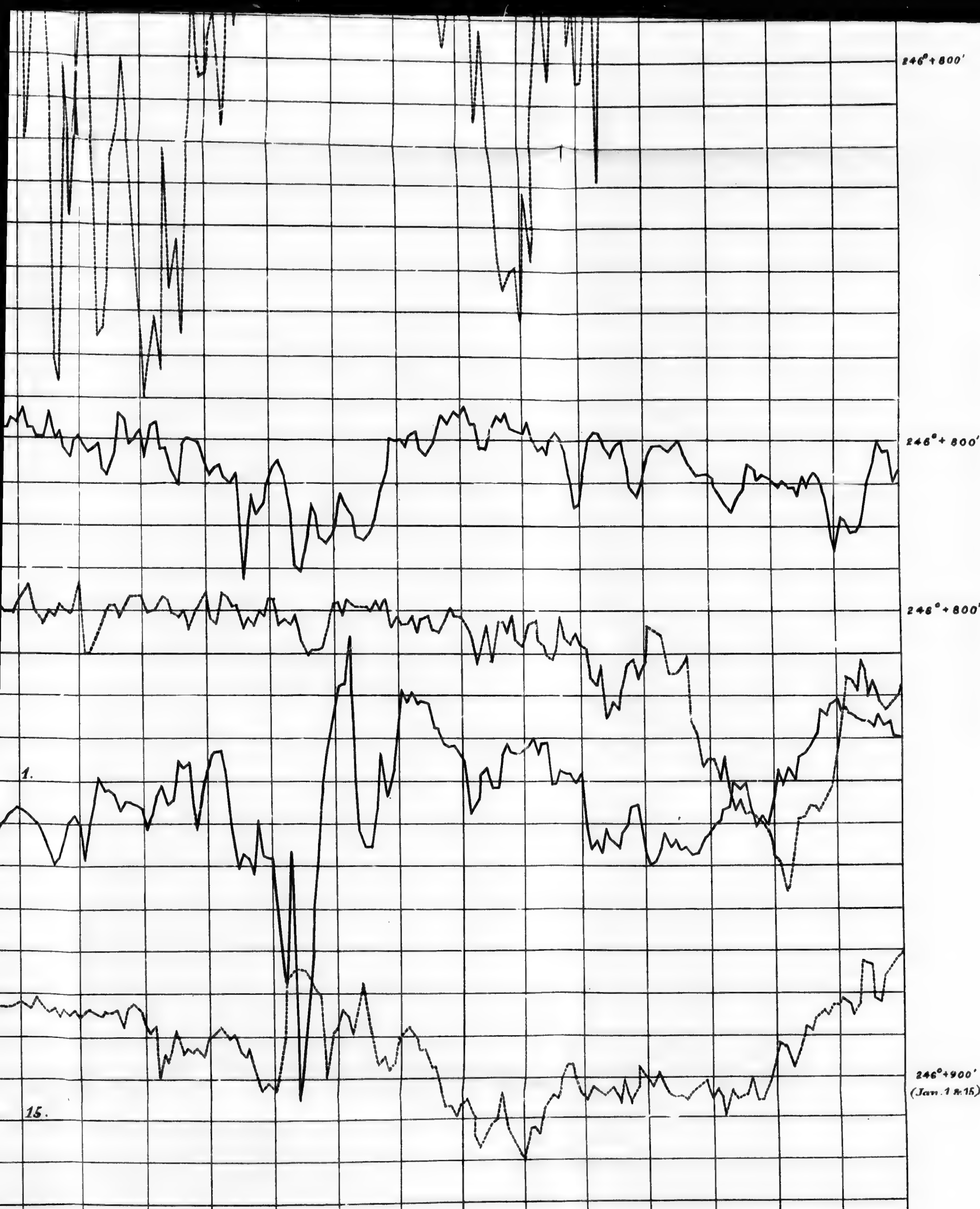

40
20
0h Mdn't.
1
2
3
19
20
21
22
23
24h Mdn't.

TERM-DAY OBSERVATIONS. FORT
MAGNETIC DECLIN



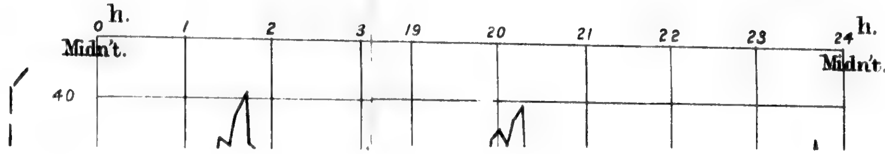

10
11
N.
13
14
15
16
17
18
19
20
21
22
23
24h
Mdnt.
November 15.
246° + 800'

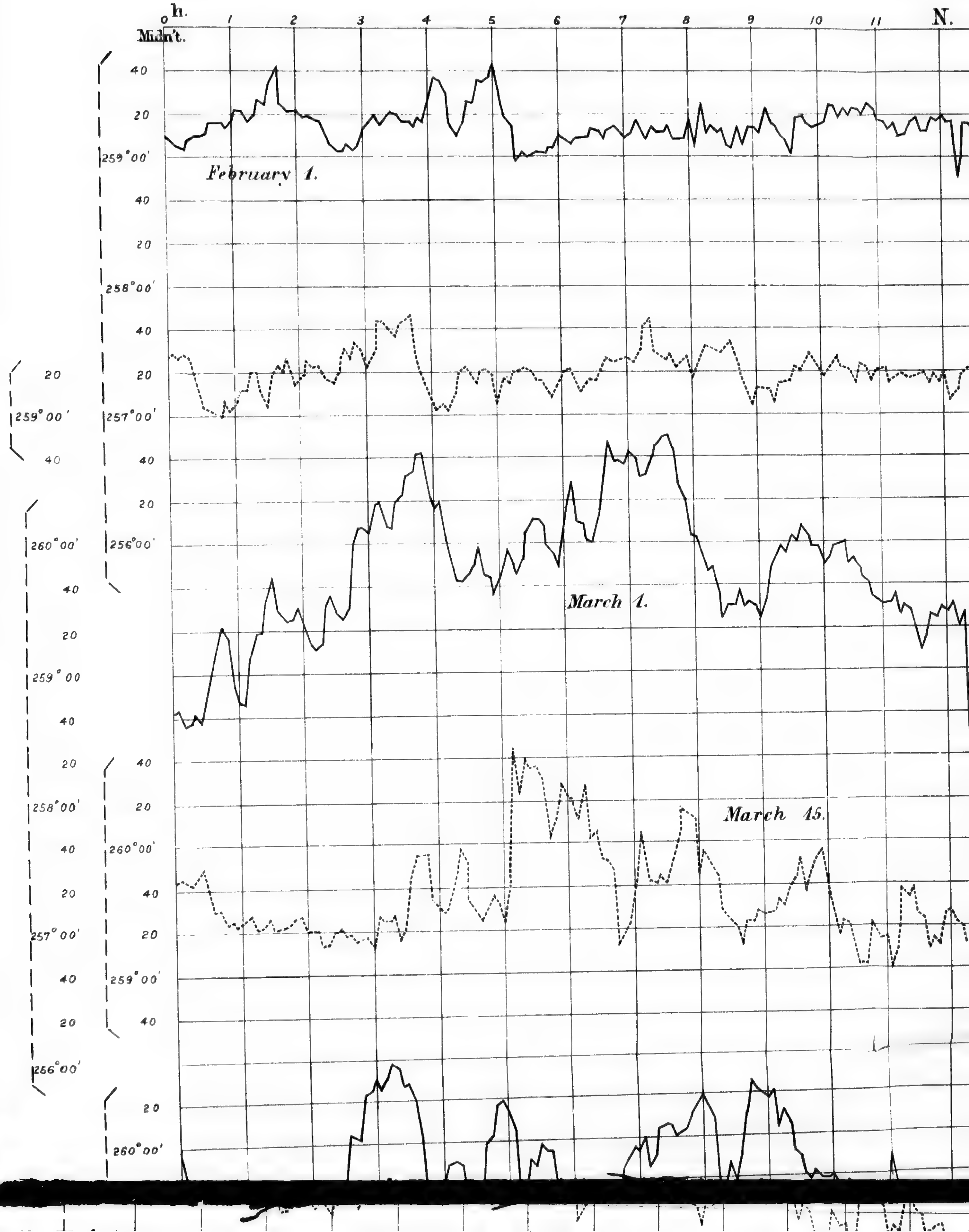

December 1.
December 15.
January 1.
January 15.
break
0 Mdn't.
12 Noon
Göttingen Mean Time.


246° + 800′
246° + 800′
246° + 800′
1.
246° + 900′
(Jan. 1 & 15)
15.
10
11
12
Noon
13
14
15
16
17
18
19
20
21
22
23
24
Mdn't.
A. Ziwet fecit; Oct. 1886.

1883.

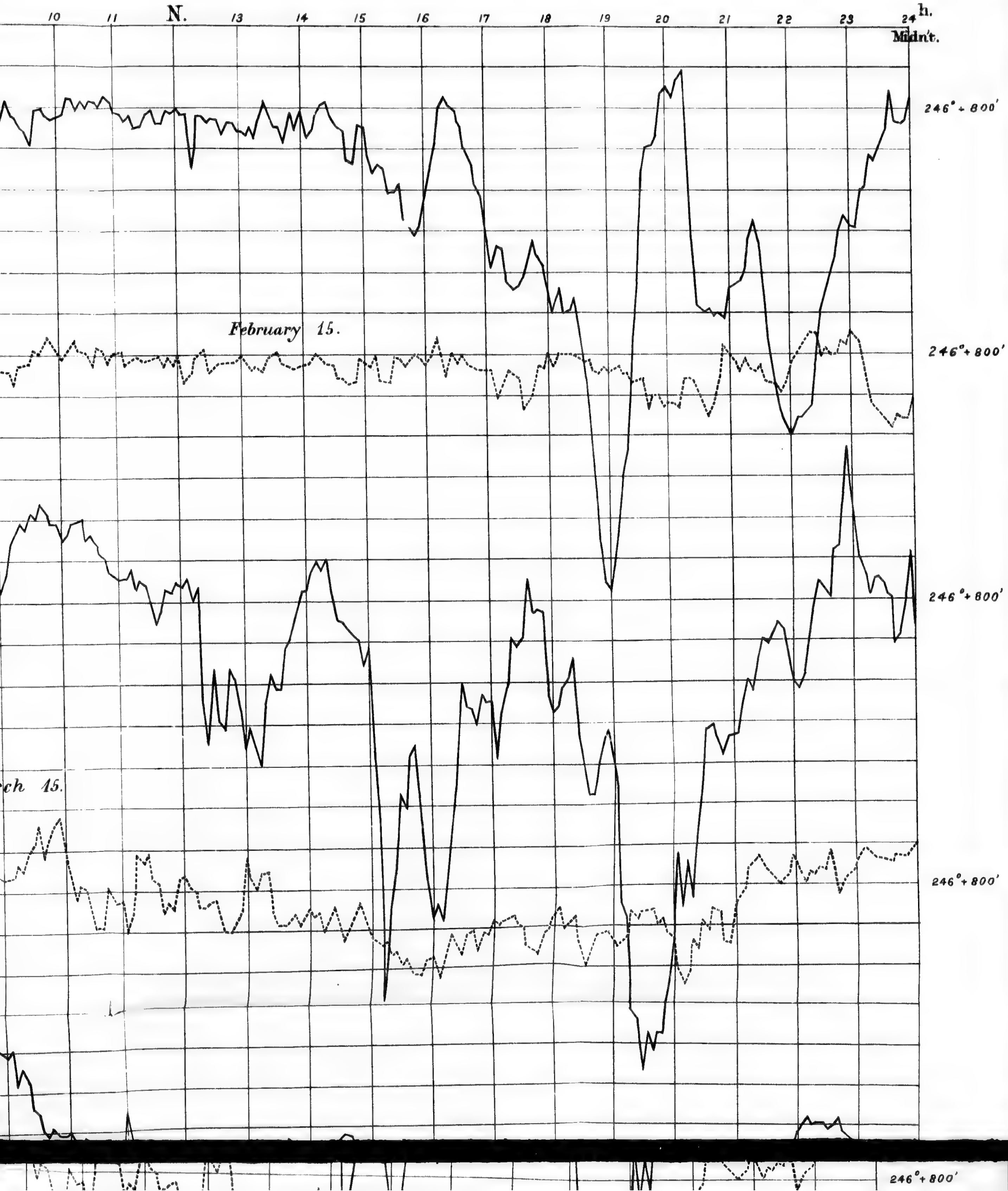
PLATE III.

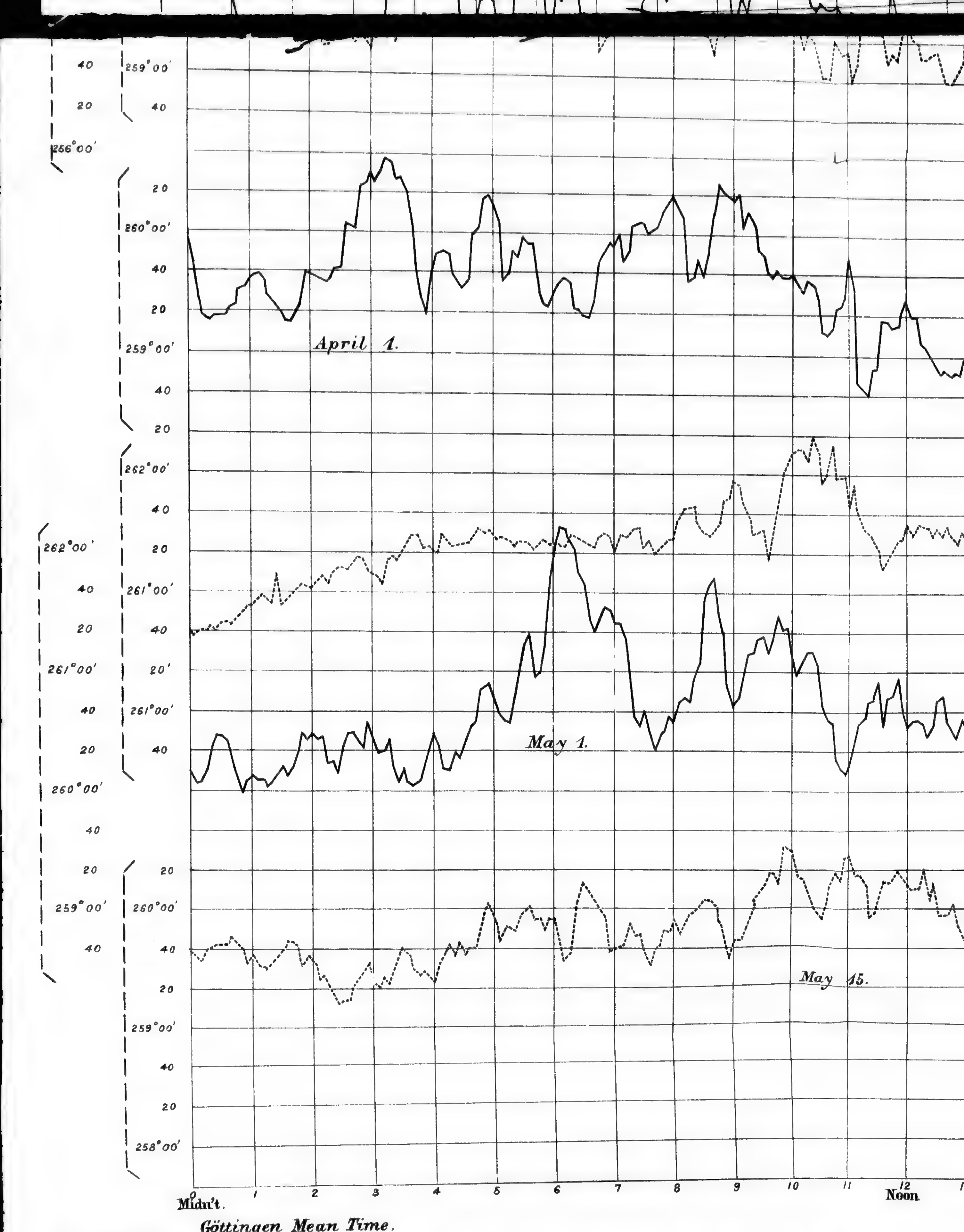


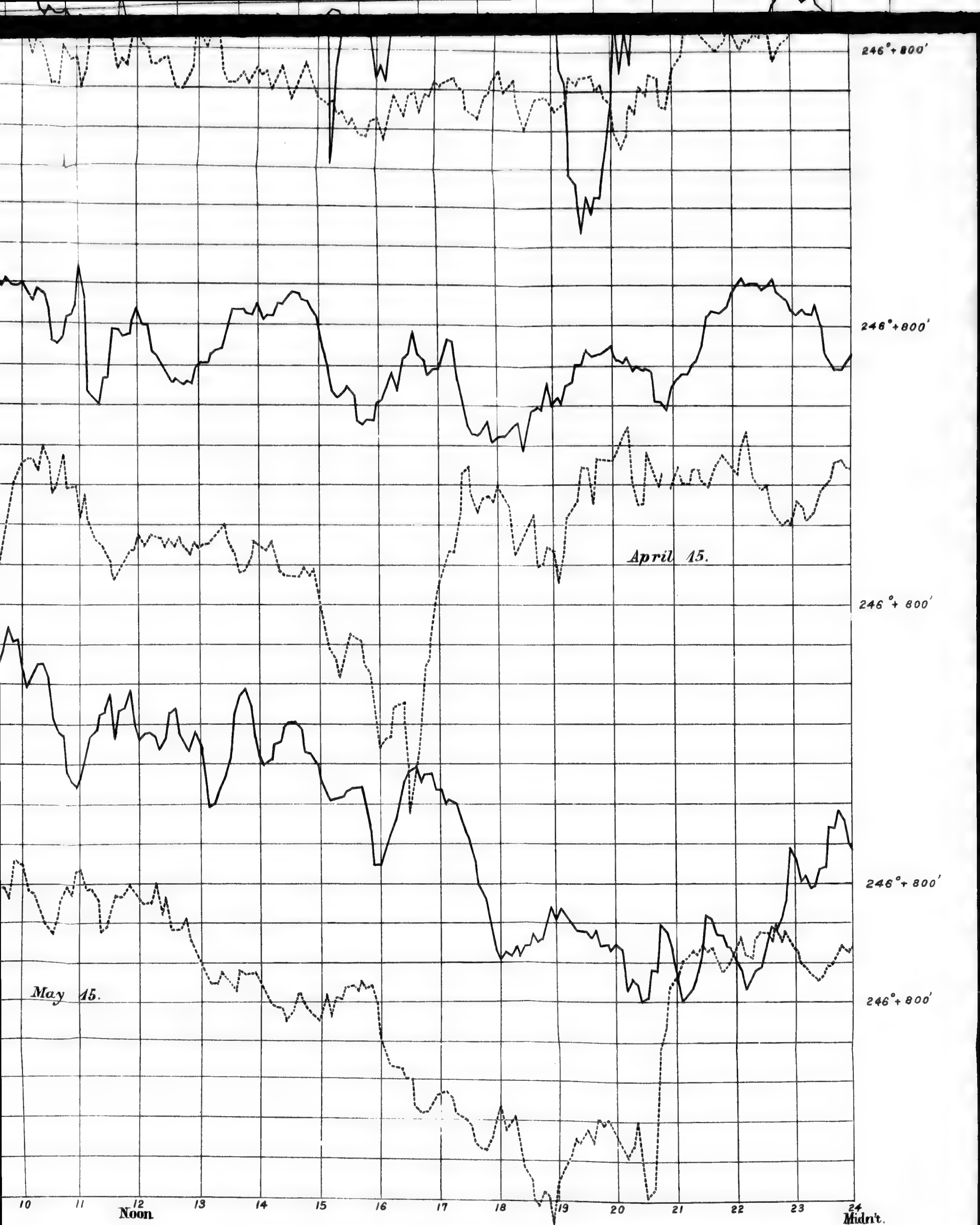

0 h. Midn't.
1
2
3
4
5
6
7
8
9
10
11
N.
February 1.
March 1.
March 15.
259°00'
258°00'
257°00'
256°00'
260°00'
259°00'
258°00'
257°00'
256°00'
260°00'
259°00'
260°00'
40
20

OBSERVATIONS. FORT CONGER, GRINNELL LAND. PLATE III.

MAGNETIC DECLINATION, EAST.




April 1.
May 1.
May 15.
Midn't.
Noon
Göttingen Mean Time.

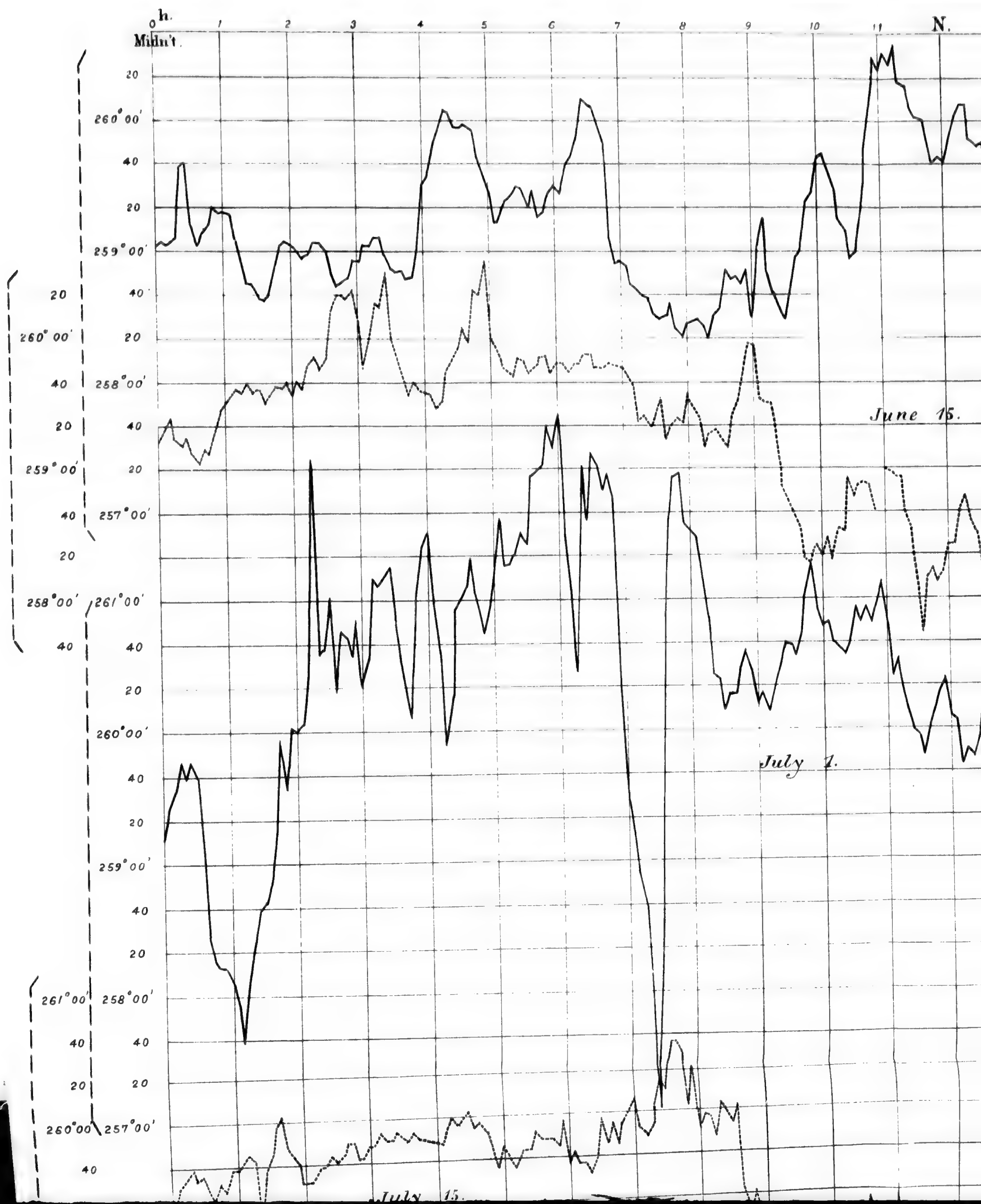


A. Ziwet fecit; Nov. 1886.

1883. PLATE IV.

0h. 1 2 3 19 20 21 22 23 24h.

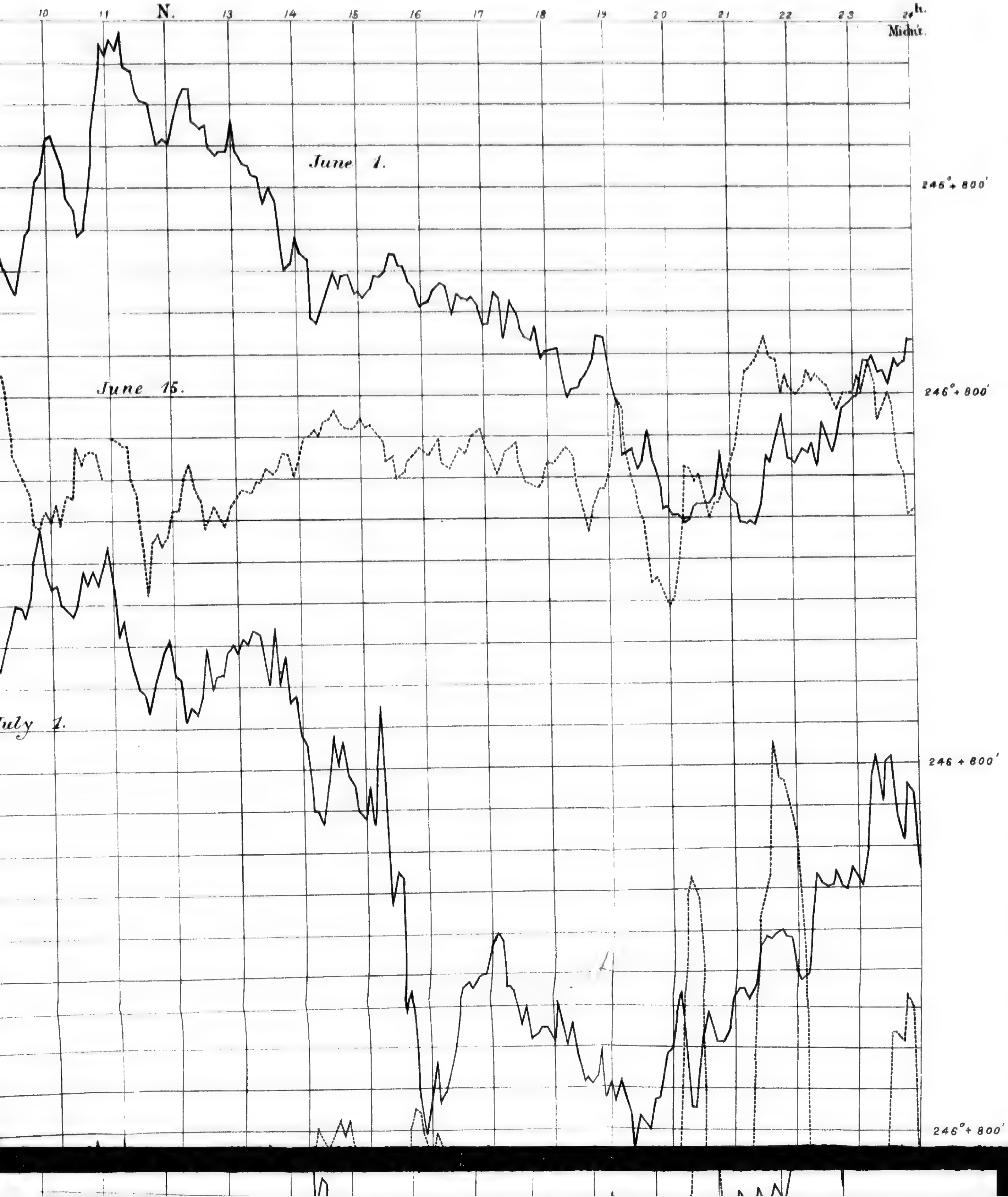
Midn't.

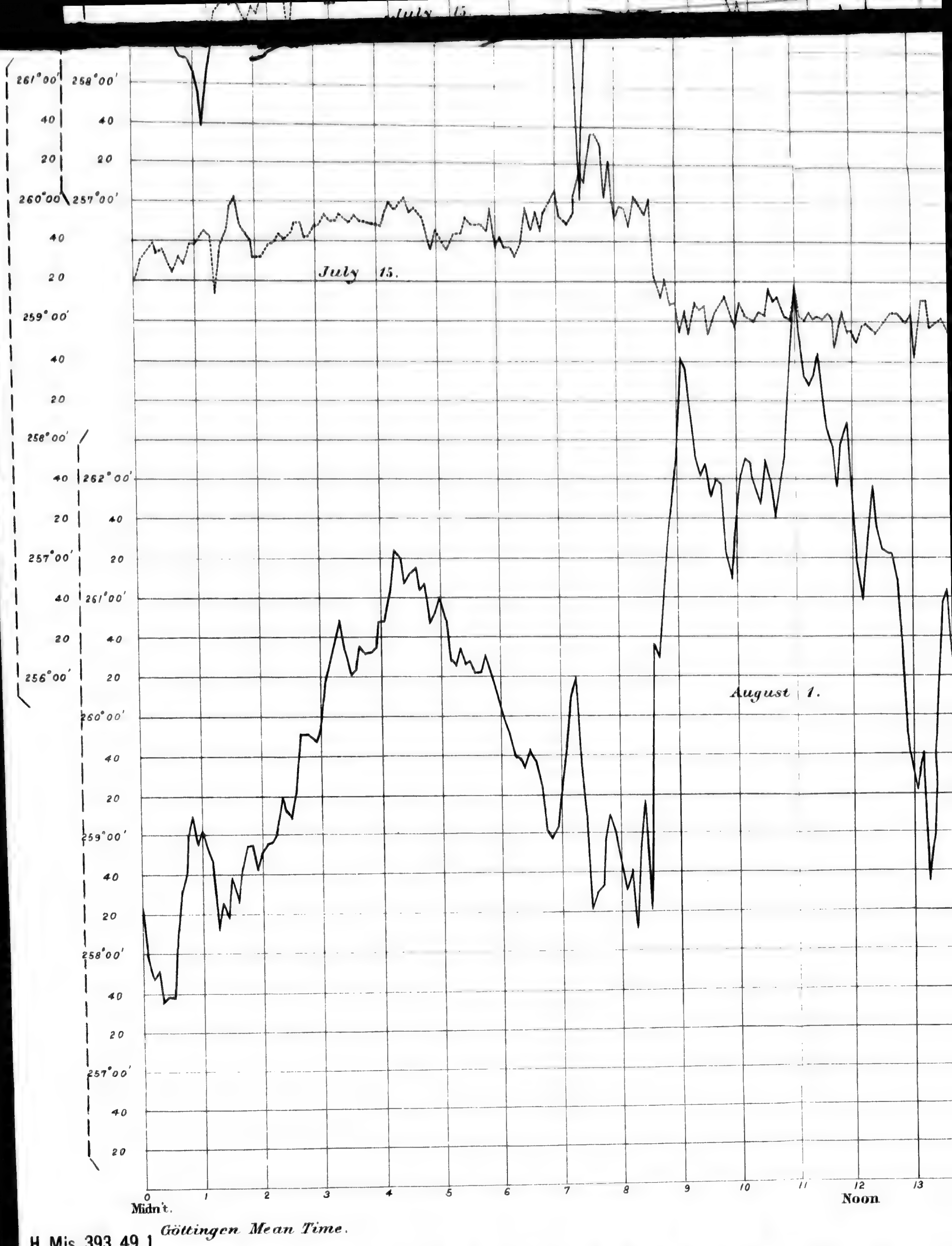

0h. Midn't.
1
2
3
4
5
6
7
8
9
10
11
N.
20
260° 00'
40
20
259° 00'
40
20
258° 00'
40
20
257° 00'
261° 00'
260° 00'
259° 00'
June 15.
July 1.
July 15.

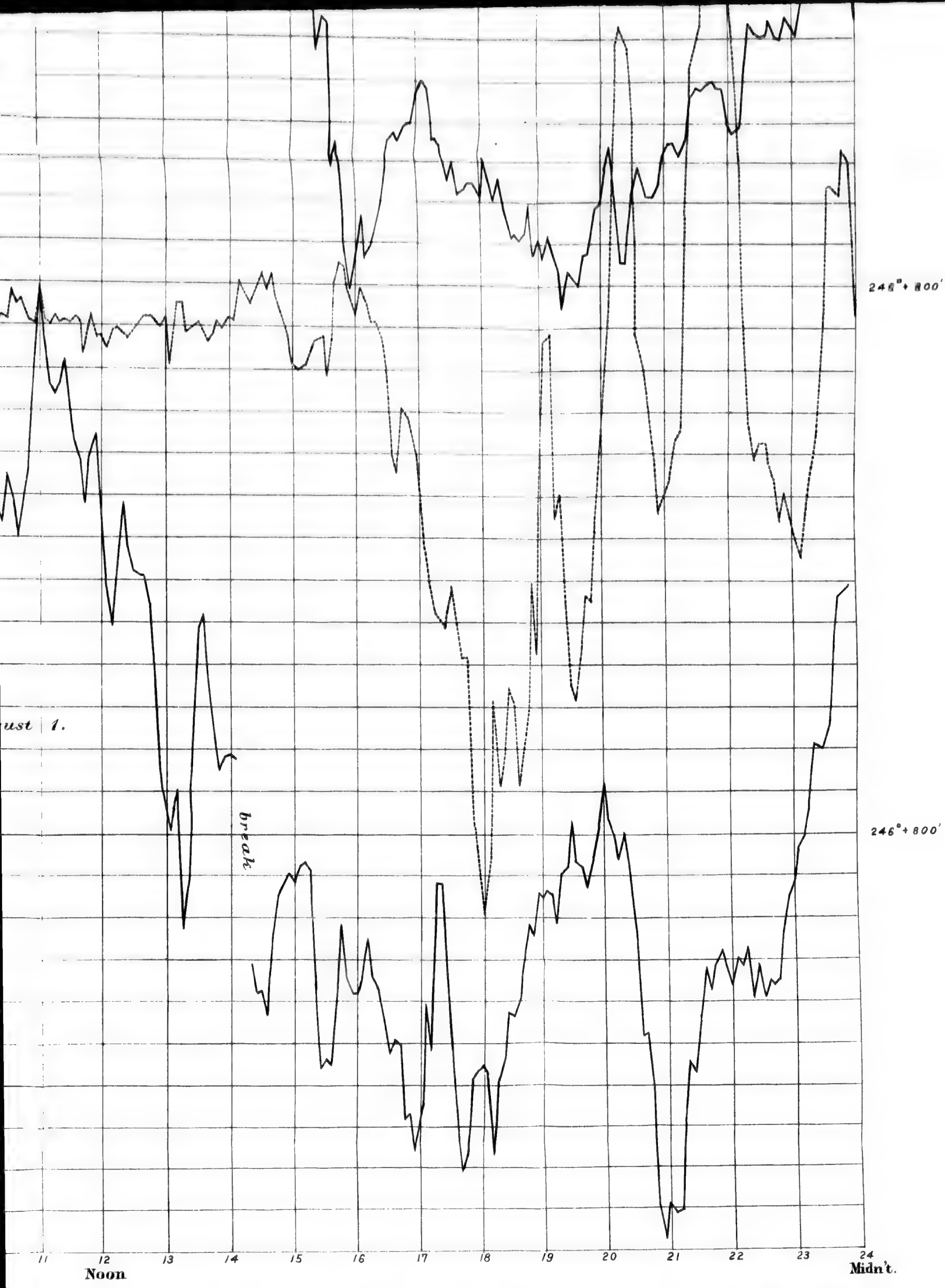
BSERVATIONS. FORT CONGER, GRINNELL LAND.

MAGNETIC DECLINATION, EAST.

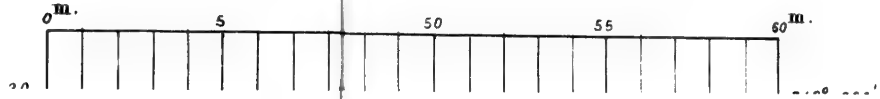
PLATE IV.




July 15.
261° 00'
258° 00'
40
20
260° 00'
257° 00'
259° 00'
258° 00'
262° 00'
257° 00'
261° 00'
256° 00'
260° 00'
259° 00'
258° 00'
257° 00'
July 15.
August 1.
0
Midn't.
1
2
3
4
5
6
7
8
9
10
11
12
Noon
13
Göttingen Mean Time.

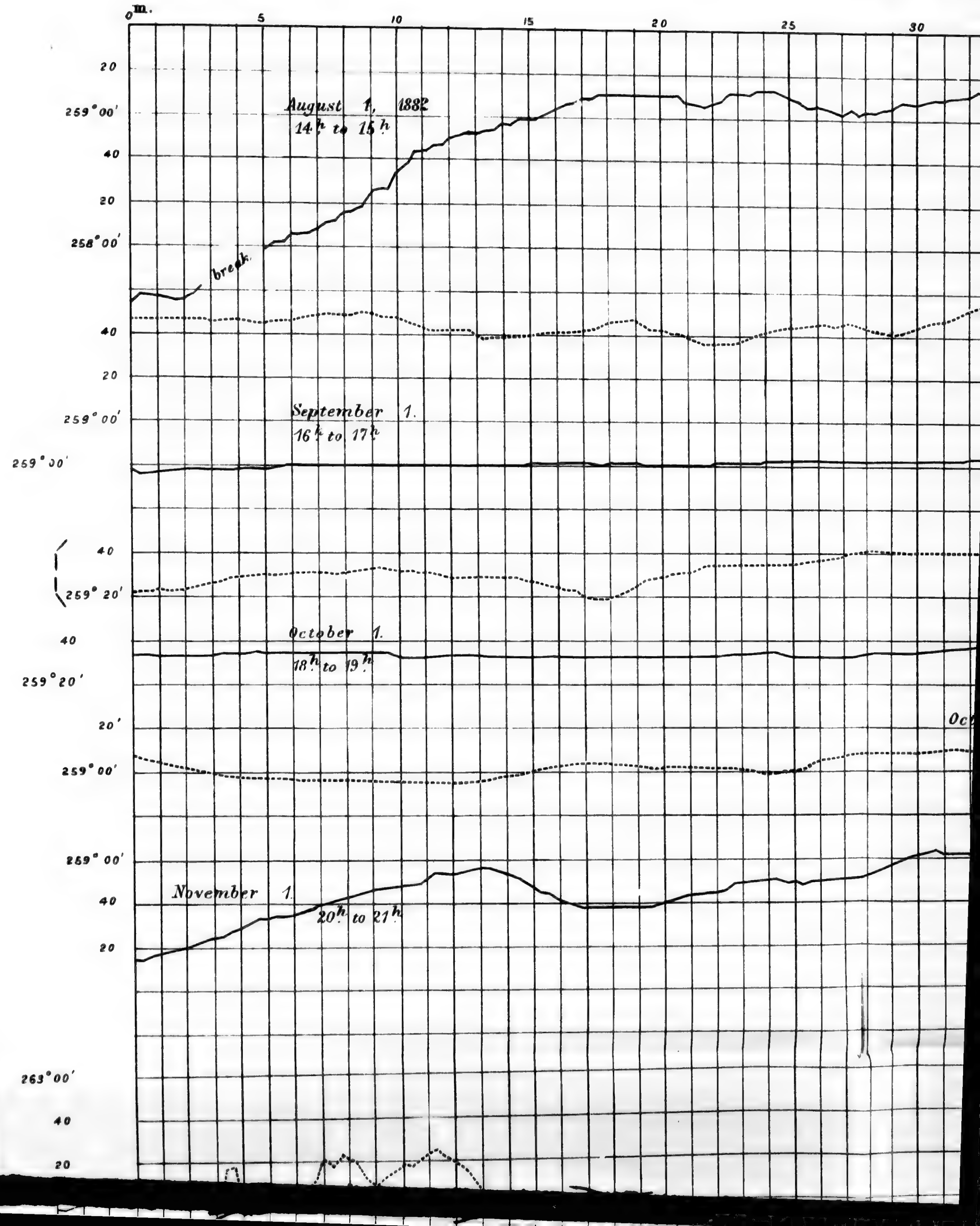


A. Ziwet fecit, Nov. 1886.


0m.
5
50
55
60m.

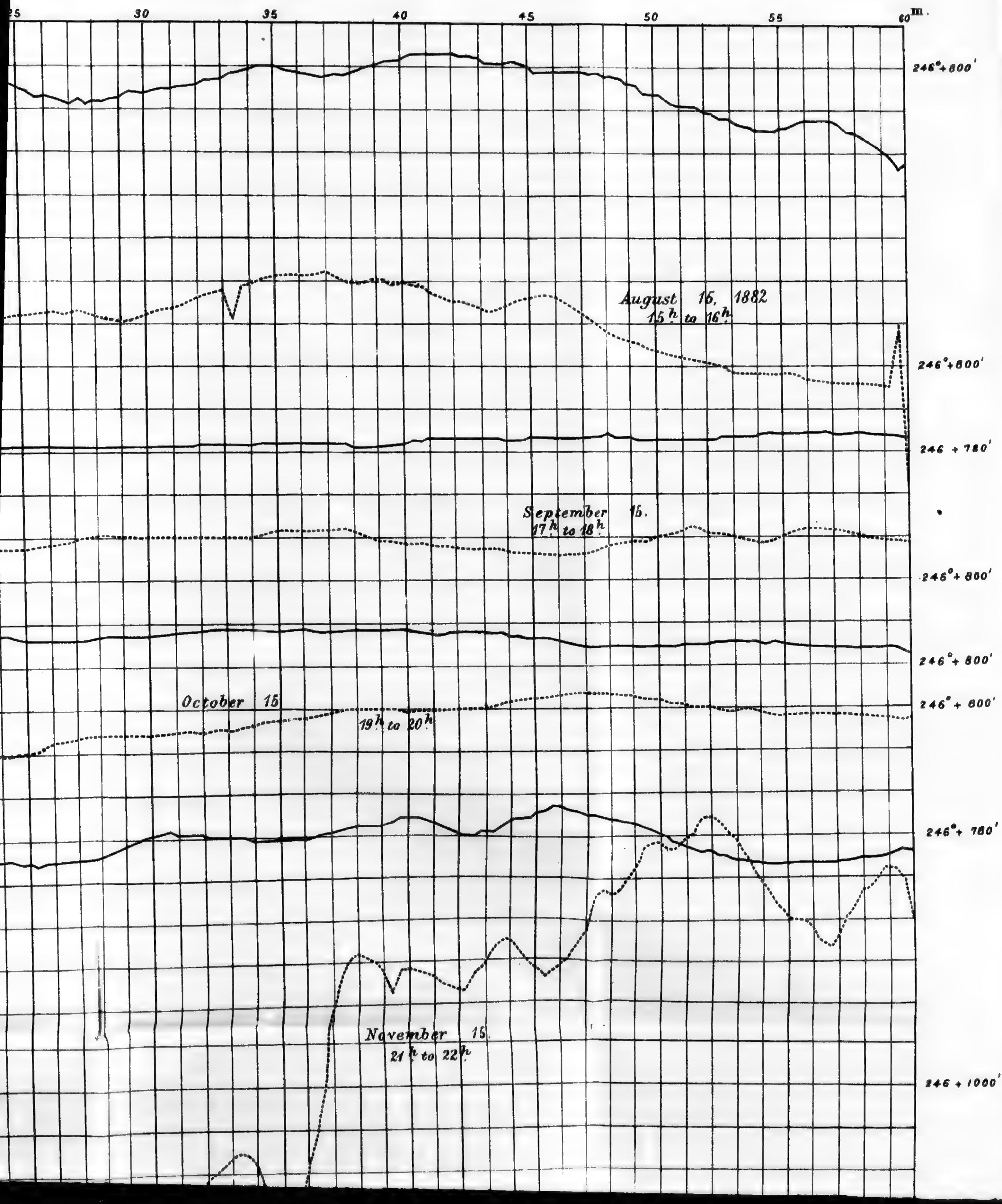
1882–'83.

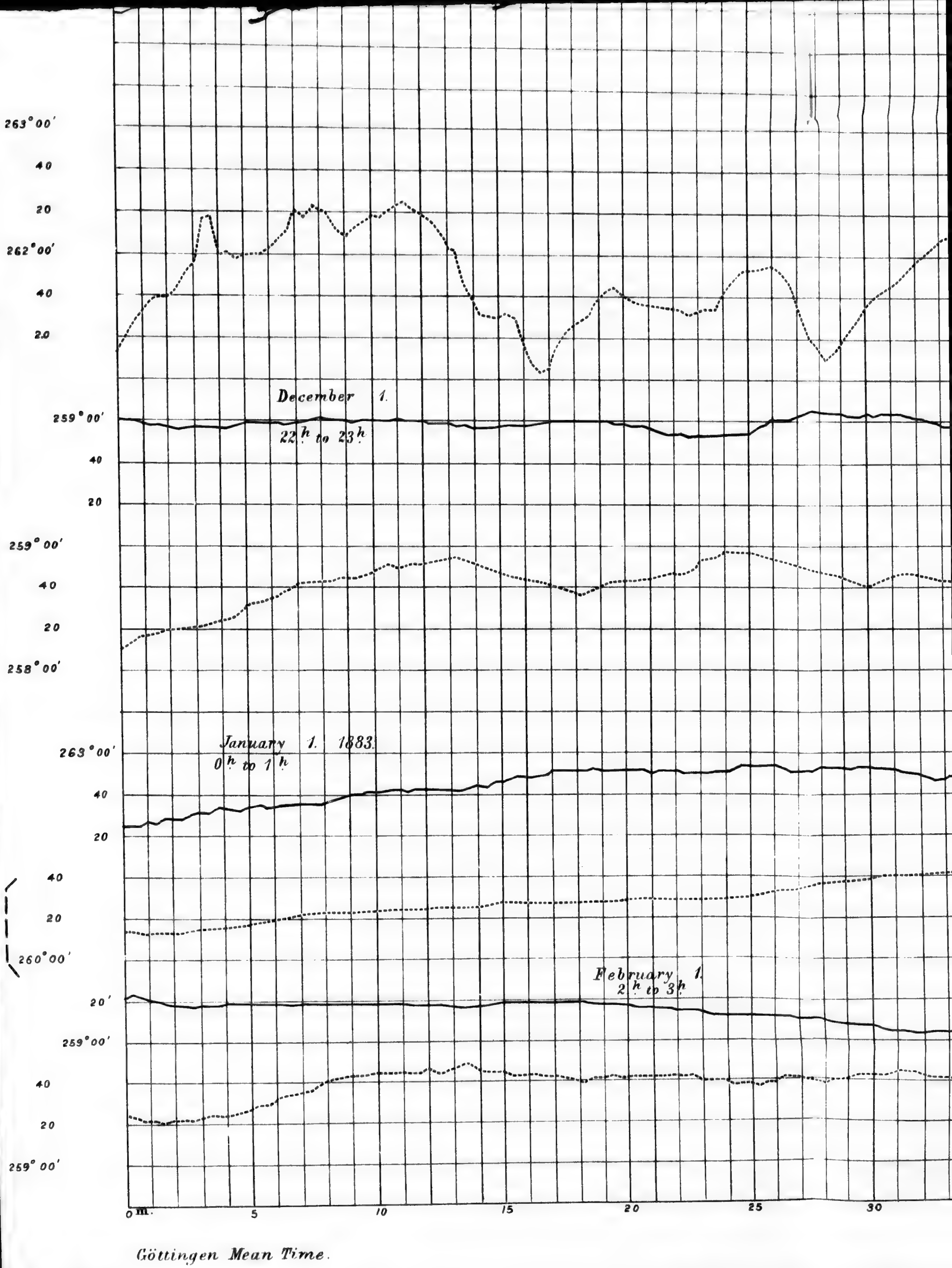
TERM-HOUR OBSERVATIONS. FORT
MAGNETIC DECLINA

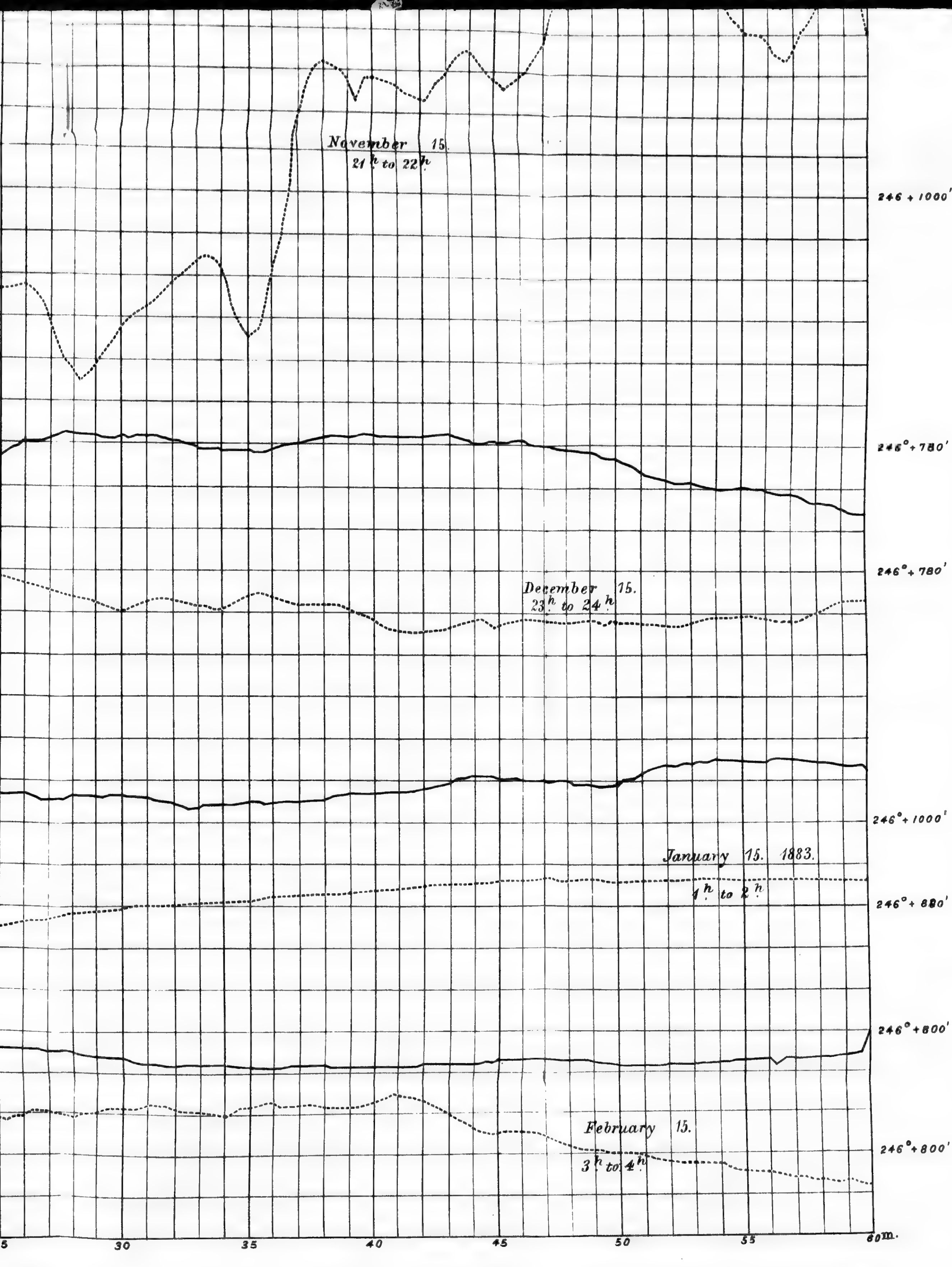


SERVATIONS. FORT CONGER, GRINNELL LAND.
MAGNETIC DECLINATION, EAST.

PLATE V.




263° 00'
40
20
262° 00'
40
20
December 1.
22h. to 23h.
259° 00'
40
20
259° 00'
40
20
258° 00'
January 1. 1883.
0h. to 1h.
263° 00'
40
20
40
20
260° 00'
February 1.
2h. to 3h.
20'
259° 00'
40
20
259° 00'
0m.
5
10
15
20
25
30
Göttingen Mean Time.



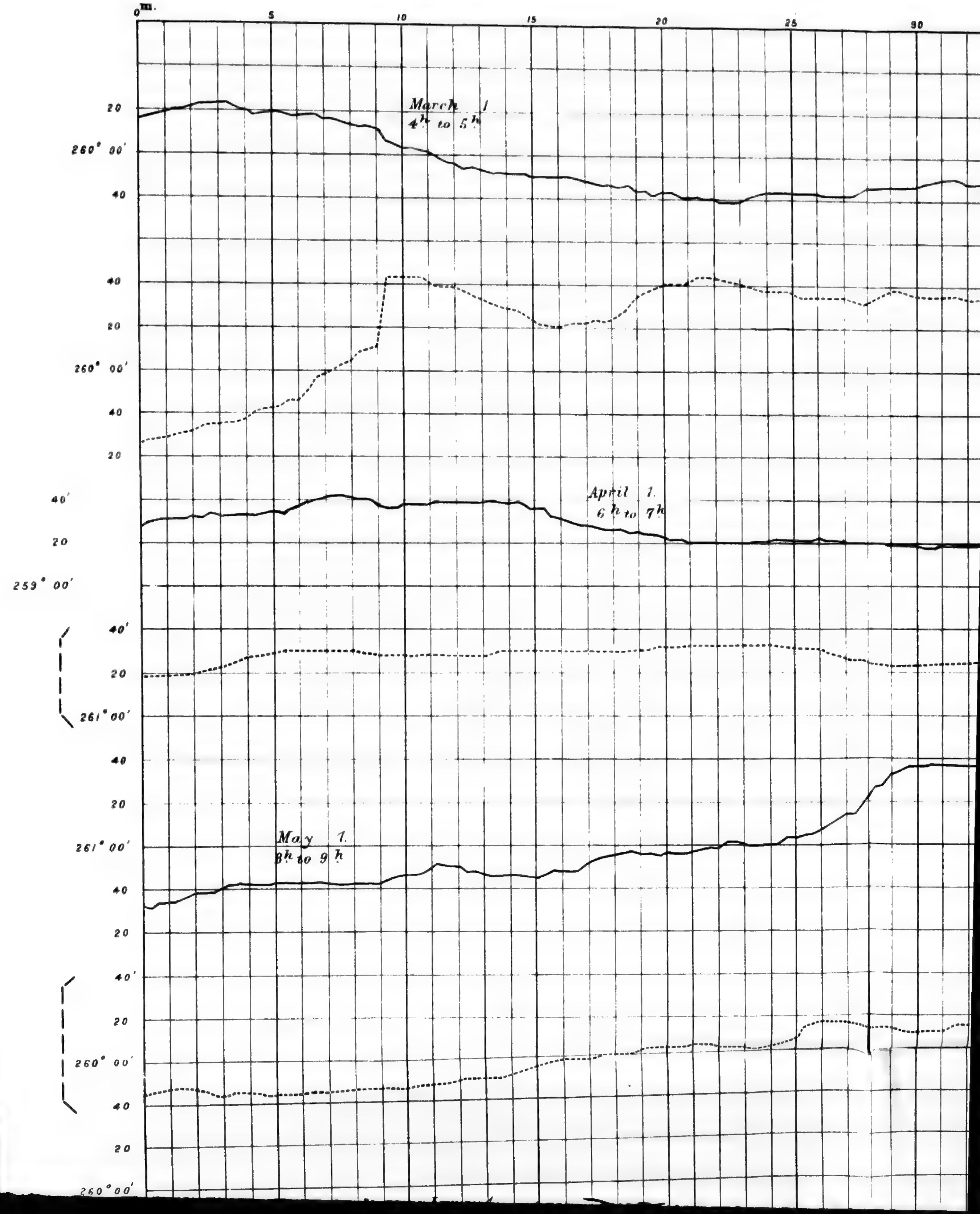
A. Ziwet fecit, Nov. 1886.


0m.
5
50
55
60m.

1883.

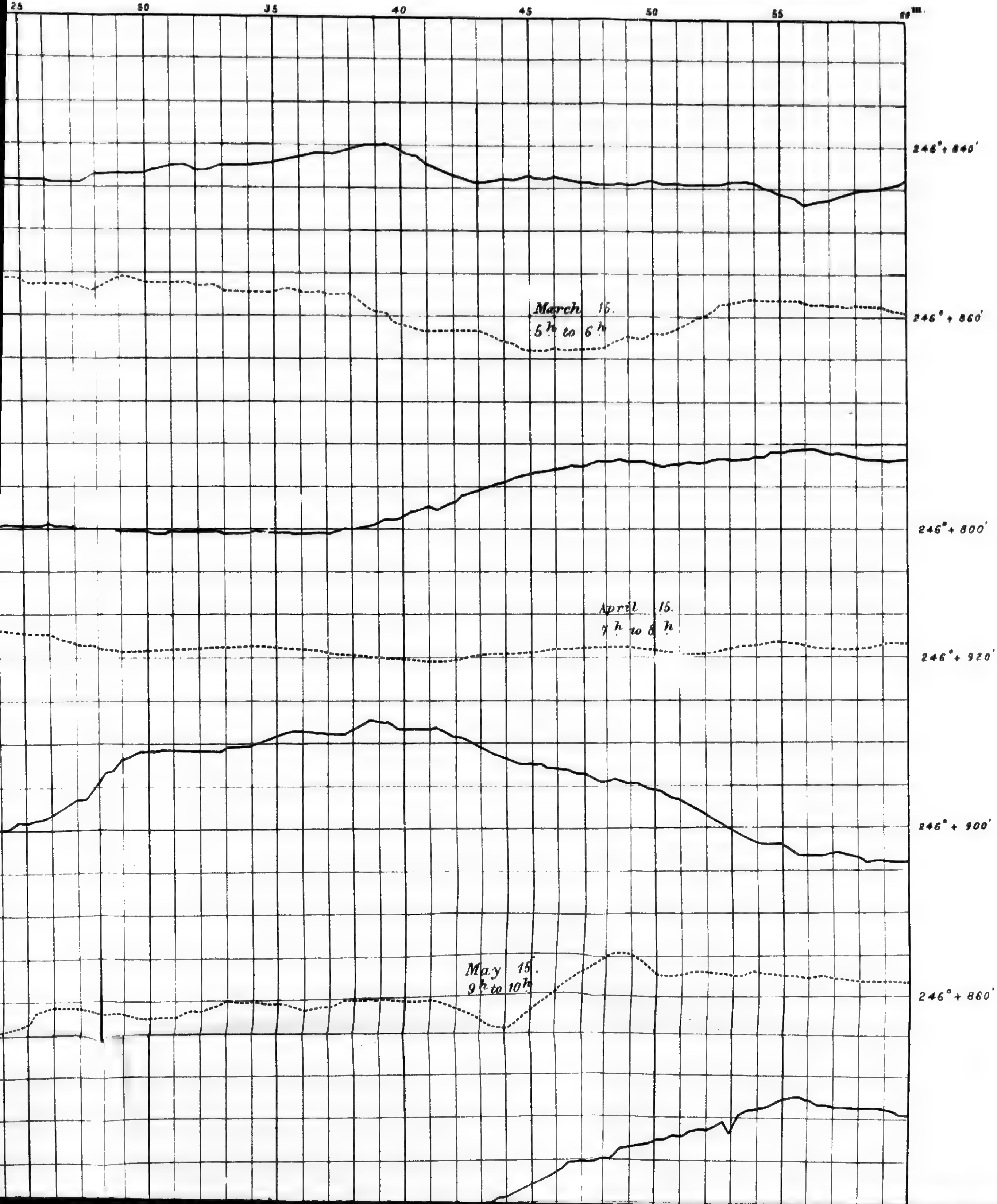
TERM-HOUR OBSERVATIONS. FORT

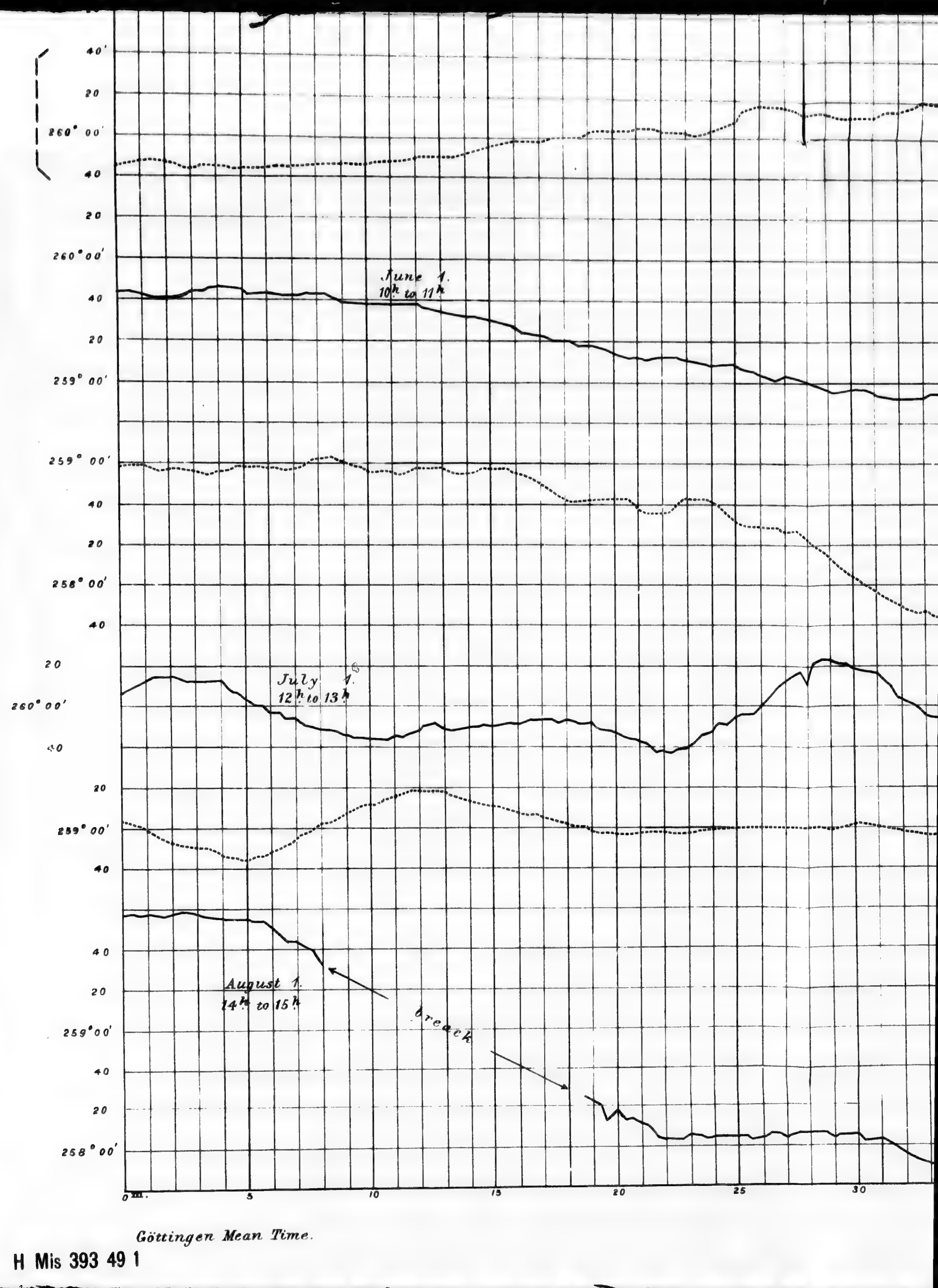
MAGNETIC DECLINA

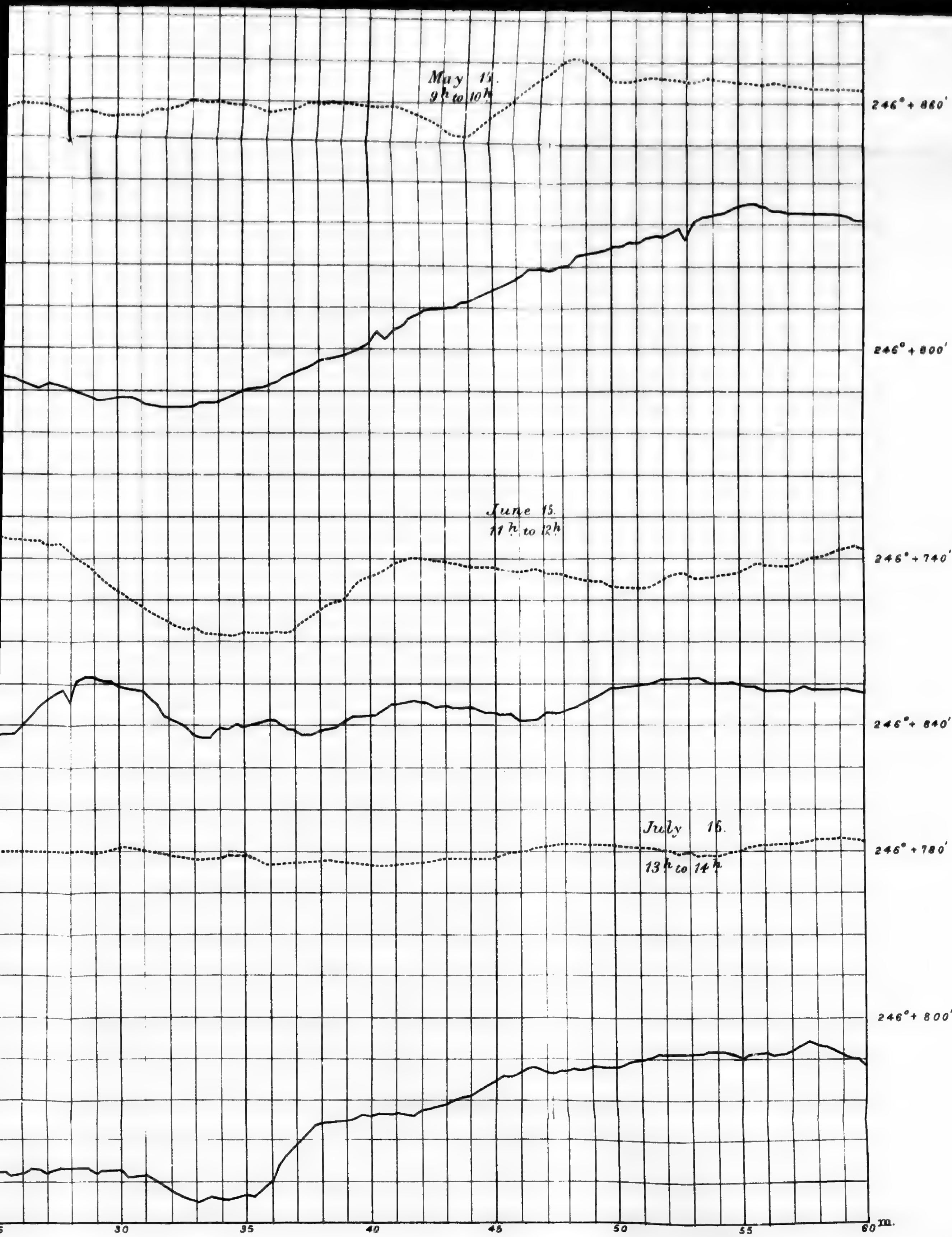


BSERVATIONS. FORT CONGER, GRINNELL LAND.
MAGNETIC DECLINATION, EAST.

PLATE VI.




40'
20
260° 00'
40
20
260° 00'
40
20
259° 00'
June 1.
10h. to 11h.
259° 00'
40
20
258° 00'
40
20
260° 00'
40
July 1.
12h. to 13h.
20
259° 00'
40
40
20
August 1.
14h. to 15h.
breach
259° 00'
40
20
258° 00'
0m.
5
10
15
20
25
30
Göttingen Mean Time.



A. Ziwet fecit; Nov. 1886.

TIDAL OBSERVATIONS.

APPENDIX No. 140.

Observations reduced by the Tidal Division, U. S. Coast and Geodetic Survey Office, and reported by Alex. S. Christie, LL. M., computer in charge.

The principal series of tidal observations secured by the Polar Expedition under command of Lieut. A. W. Greely, U. S. Army, was made at Fort Conger, the headquarters and depot of the party, on Lady Franklin Bay, Grinnell Land, in latitude 81° 44′ north, longitude 64° 43.8′ west from the meridian of Greenwich, identically the position of the *Discovery*, of Sir G. S. Nares' expedition, during the winter of 1875-'76. When Lieutenant Greely abandoned the station in August, 1883, the original tidal records, too bulky for easy transportation, were left stored at Fort Conger; but by a wise prevision close transcripts had been made and verified, and these, brought away with the party, were faithfully preserved through all the vicissitudes of the retreat southward and the memorable struggle with hunger and cold at Cape Sabine. These transcripts, submitted by the Chief Signal Officer, U. S. Army, to the Superintendent of the U. S. Coast and Geodetic Survey, February 18, 1885, consist of one *cahier* of eleven pages, containing a record of the hourly heights of the tide from August 20, 1881, to June 30, 1882, and one *cahier* of thirty-three pages, containing the times and heights of high and low water from August 20, 1881, to July 1, 1883. A broken record of high and low waters from July 1 to August 8, 1883, drawn by Lieutenant Greely from his private journal, and placed at the disposal of the Superintendent of the Survey, completes the available Fort Conger series. *

Special observations made by the expeditionary force at points in the Arctic seas other than Fort Conger, most of them synchronous with those at the principal station, were also submitted by the Chief Signal Officer, and are discussed in their proper sequence in the following pages.

In adjusting the observations preparatory to their reduction and discussion, recourse was had to all the now available sources of extrinsic evidence—foot and marginal notes on the transcripts, written and oral communications from Lieutenant Greely, and notes extracted from his private journal. The conclusions arrived at, with the system of corrections applied to the transcript values to refer the whole series to the same plane of reference, are given further on.

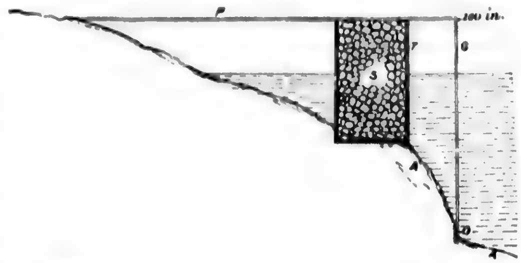
The following extracts from a letter addressed by Lieutenant Greely, October 21, 1886, to the Superintendent of the Coast and Geodetic Survey, describes the method of observation and the difficult conditions under which the series was obtained. He says:

> As soon as the party was landed arrangements were made for observing the tide, in addition to observations previously made.
>
> On August 19, 1881, a temporary wooden gauge, designated as No. I, was erected on the sloping shore, about one hundred yards [91^m] south of the station. It consisted simply of a narrow strip of inch board nailed to stout supports, which were driven as far as possible into the ground or sea-bottom. The graduations were arbitrary, but later one division on the scale was found to be equal to 0.694 inch.
>
> The hourly readings on Gauge No. I, as of all others, were nominally made on the even hour of Washington mean time, but, as determined from the mean of ten observations, they were really made seven minutes after the even hour, as other observations and the time necessary to reach the gauge occupied seven minutes. It may also be remarked that whenever during the first year the high or low water fell from -5^m to $+7^m$ of the even hour it was almost invariably recorded $+7^m$, owing to the enforced absence of the observer for other readings. The tidal observations for the first month suffered somewhat from the necessity of the observer engaging in manual labor between his observations, and also from his being replaced at times by men not trained observers.

* Certain tidal records obtained by means of a self-registering electrical apparatus improvised by Lieutenant Greely, which gave excellent results in the neaps, but owing to physical reasons could not work well in the springs, except for a limited range, were carefully packed several months prior to retreat, and, later, time was lacking to prepare transcripts of these, as well as of the regular series obtained by direct observation upon staff gauges. They served an excellent purpose in checking the regular readings by the observers.

On August 24 a standard bench-mark was erected about 12 yards [about 11^{m}] true east of the north end of the main-station building. The reference point is the level top of a bar of iron, which, having a double cross (++) on the south side, is fastened by Portland cement vertically into the upper surface of a pile of brick masonry, built with the same cement and resting 24 inches below the surface of the ground, or from 2 to 4 inches below permanently frozen soil. When the station was abandoned an empty box was turned over this bench-mark and securely weighted down with stones.

Gauge No. I was read until 5 p. m. August 24, 1881, when Gauge No. II was brought into use. This gauge was about 40 yards [36^{m}] west of the station, on a moderately sloping part of the shore. Its method of construction is best explained by the accompanying diagram.



G, Gauge No. II; *AA*, stiff hard bottom; *T*, iron tank, 5 x 3 x 3 feet, filled with stone; *S*, loose stone buttress; *P*, wide 2-inch oak plank.

The iron tank, loaded with stones, was set into a shelf dug out of the main bank, while its front was blocked up with piles of stone, which seemed to insure its integrity of position. The wide 2-inch oak plank was secured to the tank so as to move with it. The gauge, a narrow strip of inch board, was driven as far into the bottom as possible, and at its upper end was fastened to the plank by light nails, which it was thought would spring out or break in case of displacement of either gauge or plank.

The rapid accumulation of ice during September and early October, when it was some 4 feet thick adjoining the gauge, rendered it certain that winter readings could not be continued, even with a couple of men assigned to the duty of clearing away the ice. It consequently became necessary to establish a new gauge.

The recommendation made to the expedition to use a pulley and rope, supported by a tripod over a hole in the ice, one end of the rope carrying a scale and weighted to the bottom, the other drawn taut by a counterpoise, in no way commended itself. The certainty that the main ice must move, and consequently by diverging the line from a perpendicular impair the accuracy of the readings, was fully borne out by the fact, later established, that the main harbor floe moved for months at an average rate of over 3 feet off shore.

A fixed gauge was determined on, and after experiments Gauge No. III was erected at a distance off shore of some 40 or 50 yards [36^{m} or 46^{m}].

A bar of iron 20 feet long and 1½ inches square was driven into the stiff clayey bottom 3 or 4 feet. The bar itself was scaled every 10 inches by a wire ring soldered on the bar, and to every inch by paint. The action of ice and water on the paint necessitated the substitution of a wooden scale, which was firmly bound to the rod by wire. Any displacement of the wooden scale was at once evident from the changed relation of the soldered wire rings.

It only remained to protect the gauge by keeping open a tide hole, an operation difficult in the extreme. The ice acquired a thickness before the winter ended of between 7 and 8 feet, which rendered it necessary to employ two men permanently in the work of freeing the hole from ice. The water was at times covered with kerosene oil, in order to prevent ice from forming rapidly, but no satisfactory results were obtained, or, indeed, were possible, as the troublesome ice, which decreased the size of the hole, formed on the sides, owing to the lower temperature of the adjacent ice.

To insure comfort to the observer, and consequently more careful readings during the many months of continuous darkness, and also as a measure of protection against rapidly forming surface ice, a house of ice was built over the tide hole.

The movement of the ice off shore necessitated not only repeated additions to the ice-house, but also the enormous task of enlarging the tide hole laterally at times when the ice ranged from 5 to 8 feet in thickness. This was necessarily work done by means of artificial light, and in a limited space. The tidal observations during the winter half of the year represent no less than the constant labor of three men.

During both winters the part of the floe toward shore grounded at low tide in the springs, but owing to the slope the outer part never did to such extent as to impair the free ingress and egress of water.

The plan of Gauge No. III is shown in the sketch. It was read from 1 a. m. December 21, 1881, to 7 a. m. January 21, 1882, when Gauge No. IV, an exact counterpart of III, was put down within a foot of the latter, and superseded it for the regular observations.

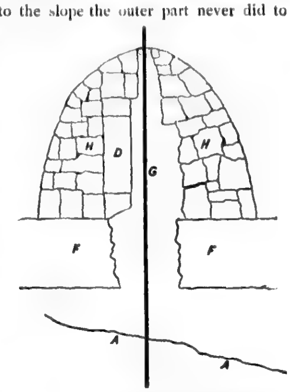
Gauge No. IV was read until June 19, 1882, when recourse was had for a few days to Gauge No. II, which had *apparently* been displaced less than an inch since the preceding October. The former gauge was carried away by ice and the latter taken down June 29.

The regular readings were then made from Gauge No. V, which was simply an iron bar 1½ inches square, driven into the bottom near shore.

This gauge, frequently injured by floating ice in July and August, was read until October 14, 1882. It was then superseded by Gauge No. VI, similar to Gauge No. III, and like placed.

To guard against changes of level the second winter a sub-standard, an iron bar driven some 8 or 10 inches into the frozen ground about 10 feet above the water's edge, was established early in October, 1882, from which levels were frequently run to Gauge No. VI during the winter. This gauge was read until July 1, 1883. The broken series of high and low-water observations after that date were made upon temporary wooden gauges, Nos. VII, VIII, and IX.

From October, 1882, to June, 1883, the readings were made by Sergt. George W. Rice, except during the last few months, when Sergt. Francis Long relieved Sergeant Rice. Both these observers were careful, painstaking men, and the readings were considered to be of a high order of accuracy. The readings after June 1, 1883, must be of the least value, as the frequent movement of ice and consequent injury to gauges, some of which were temporary, impaired their value.



G, tide-gauge; *AA*, stiff clayey bottom; *FF*, main floe, 4 to 8 feet thick; *HH*, snow house; *D*, door.

The gauges were frequently compared by means of series of simultaneous readings at or near the time of high or low water, especially when a new gauge was brought into use or an old one discontinued. In addition to these water levels, Sergt. Edward Israel, the astronomer of the party, occasionally ran lines of spirit-levels with a topographer's theodolite, connecting the gauges with the bench-marks and with each other. Table I exhibits such of these levels as have been made out from existing data.

TABLE I.—*Heights by spirit-level.*

Date of determination.	Number of gauge.	Zero of gauge below standard bench-mark.	Zero of gauge below shore mark.
		Feet.	*Inches.*
Aug. 23, 1881	I	25.158	....
Sept. 12, 1881	II	27.191	....
July 1, 1882	[1]V	27.35	.....
Oct. ([2]), 1882	Shore mark.	16.335	0.00
Oct. 10, 1882	VI	. . .	145.60
Oct. 25, 1882	Shore mark.	[3]16.286	0.00
Oct. 25, 1882	VI	....	145.70
Oct. 28, 1882	VI	....	[4]142.51
Nov. 2, 1882	VI	....	146.50
Feb. 10, 1883	VI	....	148.8
Apr. 17, 1883	VI	....	156.70
Apr. 24, 1883	VI	....	156.70
June 14, 1883	VI	....	156.79
June 29, 1883	VI	....	159.75
June 30, 1883	VI	....	160.85
June 30, 1883	VII	....	112.75

[1]This line was run by Sergeant Israel, under the immediate supervision of Lieutenant Lockwood. About July 15 Lieutenant Greely discovered that Lockwood was of opinion that Israel ran to IV instead of to V. The opinion of Israel prevailed in the reduction to standard gauge, and that decision has not been disturbed.

[2]October 10 or a few days earlier.

[3]This value was rejected at Fort Conger, and, as the observer was cognizant of the circumstances attending its determination, his decision has been allowed to stand.

[4]Rejected. Conditions unfavorable, and result clearly out.

On September 12, 188 , a point 12 inches below the zero of Gauge No. II was assumed as a standard zero to which to reduce the readings on all the gauges. The transcripts brought from Fort Conger contain the *reduced* readings, and the corrections applied in the reduction are exhibited in Table II below. A letter-press copy of the original observations, preserved in Lieutenant Greely's private journal, is still sufficiently legible to afford a means of verification for a large part of the transcript values.

TABLE II.—*Staff gauges used at Fort Conger and corrections applied by the observer to reduce readings to ideal standard zero.*

No. of gauge.	Time during which the gauge was used.		Correction.	No. of gauge.	Time during which the gauge was used.		Correction.
	From—	To—			From—	To—	
			Inches.				*Inches.*
I	Aug. 20, 1881	Aug. 24, 1881, 4 p. m.	+ 36.4	VI	Oct. 26, 1882	Feb. 7, 1883	+ 5.7
II	Aug. 24, 1881, 5 p. m.	Dec. 20, 1881	+ 12.0	VI	Feb. 8, 1883	Feb. 14, 1883	+ 3.4
III	Dec. 21, 1881	Jan. 20, 1882, 7 a. m.	− 28.0	VI	Feb. 15, 1883	Mar. 9, 1883	+ 0.8
III	Jan. 20, 1882, 8 a. m.	Jan. 21, 1882, 7 p. m.	− 35.7	VI	Mar. 10, 1883	Mar. 27, 1883	− 1.1
IV	Jan. 21, 1882, 8 p. m.	Feb. 8, 1882, 8 p. m.	− 17.3	VI	Mar. 28, 1883	Apr. 2, 1883	− 2.9
IV	Feb. 8, 1882, 9 p. m.	Feb. 18, 1882, 8 a. m.	− 24.6	VI	Apr. 3, 1883	Apr. 6, 1883	− 3.7
IV	Feb. 18, 1882, 9 a. m.	June 19, 1882	− 25.7	VI	Apr. 7, 1883	May 31, 1883	− 4.5
IV	June 20, 1882, 1 a. m.	June 20, 1882, 12 p. m.	− 26.8	VI	June 1, 1883	June 15, 1883	− 4.6
IV	June 21, 1882, 1 a. m.	June 21, 1882, 12 p. m.	− 27.4	VI	June 16, 1883	June 23, 1883	− 5.6
IV	June 22, 1882, 1 a. m.	June 23, 1882, 12 p. m.	− 29.0	VI	June 24, 1883	June 28, 1883	− 6.6
II	June 14, 1882	June 29, 1882, 4 p. m.	+ 12.0	VI	June 29, 1883	June 29, 1883	− 7.6
V	June 29, 1882, 5 p. m.	Oct. 14, 1882	+ 4.8	VI	June 30, 1883	July 1, 1883	− 8.6
VI	Oct. 15, 1882	Oct. 25, 1882	+ 6.5	VII	July 1, 1883, 2 a. m.	Aug. 9, 1883	+ 39.5

On proceeding to the reduction of the observations, the transcript values were first laid down upon profile paper and examined, and such as fell so wide of the mean as to be obviously due to erroneous readings, blunders in reduction to standard zero, or errors in transcription, were corrected by graphic interpolation. It is almost needless to say that the principle involved in the correction of observations, always a dangerous one, is especially so in dealing with tidal observations. Here theory is limited, by the imperfection of the analytic instrument it employs, to the consideration and quantitative estimation of the *direct* effects of the tide-producing forces, and the mind, thereby rendered familiar with an ideal state of things of great comparative simplicity, is apt to imagine a minute regularity in the phenomena of the tides which they are very far from possessing, and a consequent disposition to soften the rugged outlines of nature might very readily lead to the elimination of facts all the more valuable by reason of their egregious character. In what is believed to have been the exercise of a sound discretion this principle of the rejection of unusual observations was very sparingly applied.

A comparison of Tables I and II indicated that the observations of the second year, beginning with the readings on Gauge No. VI, had been reduced to a zero almost exactly 10 inches lower than that selected September 12, 1881, a result confirmed by the plotted curve, which ranged higher the second year by some 8 or 10 inches. On computing the daily and monthly half-tide levels the same fact was clearly put in evidence, and the locality of the change of level determined with considerable precision.

The following conclusions with respect to the several parts of the series were reached after an examination of all the data:

1. That from August 20, 1881, until June 29, 1882, Gauge No. II was the standard, the observers aiming to reduce all readings to a zero point 12 inches lower than the zero on that gauge; that Gauge No. II was stable; that the relation in altitude of the several gauges in use to Gauge No. II was from time to time ascertained with tolerable accuracy; and the corrections to reduce to it changed in accordance with those determinations and the then known vicissitudes of the gauges, and that in this matter we can not do better than trust to the men on the ground.

2 That Gauge No. V began to go down about noon of August 19, 1882, carrying the plane of reference with it, and that it continued to settle until superseded October 15, 1882, by Gauge No. VI. Hence a correction of some 9.8 inches must be distributed over that period, and as Lieutenant Greely's journal shows that the gauge was in almost continuous trouble from the ice during the whole time, and as there are, neither in the observations themselves nor elsewhere, data to warrant an unequal distribution, a distribution proportional to the time has been adopted.

3. That from October 15, 1882, until July 1, 1883, a constant correction of 9.8 inches is required.

Table III contains the corrections applied to the transcript values to reduce the whole series to a plane of reference 28.191 feet below the standard bench-mark established August 24, 1881.

TABLE III.—*Corrections applied to the Fort Conger transcript values to reduce them to a plane of reference* 28.191 *feet below the standard bench-mark established August* 24, 1881.

From—	To—	Correction in inches.
Aug. 20, 1881	Aug. 19, 1882. Noon	0
Aug. 19, 1882, Noon	Aug. 25, 1882	— 1
Aug. 26, 1882	Aug. 31, 1882	— 2
Sept. 1, 1882	Sept. 6, 1882	— 3
Sept. 7, 1882	Sept. 12, 1882	— 4
Sept. 13, 1882	Sept. 18, 1882	— 5
Sept. 19, 1882	Sept. 24, 1882	— 6
Sept. 25, 1882	Sept. 30, 1882	— 7
Oct. 1, 1882	Oct. 6, 1882	— 8
Oct. 7, 1882	Oct. 12, 1882	— 9
Oct. 13, 1882	July 1, 1883, 10 a. m.	—10

The series of hourly observations, extending from August 20, 1881, to June 30, 1882, inclusive, were not affected by the instability of Gauge No. V. They are given in Table IV below as they stand in the record brought from Fort Conger, that is, they are the gauge readings affected with the corrections in Table II only. The times of observation are seven minutes past the even hour of Washington mean time noted in the first column on the left, and the heights are referred to a horizontal plane passing 28.191 feet below the standard bench-mark established August 24, 1881. All values marked in the transcripts as interpolated by the observers are here indicated by an asterisk (*), and interpolations during this reduction by a dagger (†). The heights are given to tenths of inches, as noted by the observer, although the last figure must be regarded as illusory. It is rather a measure of the observer's faithful endeavor to secure valuable results than of any quantity in nature.

TABLE IV.—*Hourly readings of tide staff.*

Hours.	August, 1881.												September, 1881.		
	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	-------	-------	-------	61.1	69.7	74.0	78.0	82.0	80.0	74.6	65.0	60.1	53.0	46.0	38.7
1	40.6	51.3	-------	48.2	44.8	62.0	†65.0	79.0	78.0	76.0	70.0	68.0	62.0	51.0	41.0
2	37.9	36.3	-------	37.1	39.9	44.5	50.0	63.0	68.0	70.3	71.0	69.8	65.0	56.0	45.0
3	38.3	33.5	23.3	28.1	29.5	-------	37.0	50.0	60.0	58.8	57.0	64.0	66.0	61.0	49.0
4	42.8	35.7	-------	25.7	20.8	16.0	22.1	29.0	39.0	42.0	48.0	57.5	61.0	63.0	51.0
5	45.9	40.6	34.6	27.4	22.3	13.5	14.6	17.0	20.0	27.0	36.0	46.5	56.0	60.8	55.0
6	54.8	48.2	41.6	35.9	23.8	18.0	12.9	13.0	12.0	17.0	24.0	32.8	48.0	55.0	55.0
7	55.5	55.2	53.3	-------	31.5	27.5	21.0	16.0	13.0	12.0	17.0	25.0	39.0	47.5	52.0
8	58.7	58.6	60.2	48.2	45.4	41.0	32.5	25.0	21.5	16.0	17.0	23.0	31.0	40.0	47.0
9	55.5	62.4	67.1	58.6	57.2	57.0	49.0	42.0	36.0	25.6	23.0	25.0	30.0	34.5	40.0
10	52.1	60.7	67.0	70.1	66.6	68.0	66.0	58.0	53.0	39.5	34.0	30.0	32.0	34.0	†36.0
11	46.8	54.5	62.8	68.3	70.4	74.0	74.0	71.5	68.0	56.0	47.0	†42.0	40.0	31.0	31.0
Noon.	41.6	45.8	52.2	57.3	66.6	71.0	76.7	80.0	76.8	69.8	60.4	55.0	47.0	36.0	30.0
1	36.3	41.3	43.6	49.3	57.2	61.0	71.0	76.0	80.0	73.0	68.0	64.0	54.0	42.0	32.0
2	-------	32.9	33.8	30.3	42.6	49.0	59.0	67.0	71.2	71.0	71.0	69.8	62.0	50.0	35.0
3	34.6	32.9	26.7	29.2	-------	31.0	40.0	48.0	51.0	61.0	67.0	70.0	67.0	55.5	41.0
4	-------	32.9	26.0	25.4	-------	19.0	26.6	35.0	42.0	47.2	56.5	63.0	66.0	60.0	48.0
5	41.6	41.3	28.8	25.4	17.0	13.5	17.0	22.5	28.0	33.0	44.0	54.0	62.0	61.0	53.0
6	-------	46.8	38.9	32.2	26.0	16.0	17.1	15.0	18.0	23.0	34.0	44.5	56.0	62.0	53.0
7	-------	-------	52.0	37.8	45.9	29.3	†22.0	18.5	16.0	18.0	26.0	37.0	48.0	56.0	57.0
8	-------	-------	63.5	53.6	61.3	38.0	35.0	28.5	25.0	20.0	25.0	34.0	43.0	51.0	49.0
9	68.9	75.3	72.5	67.7	71.5	57.0	48.5	41.0	33.0	30.0	31.0	34.0	39.5	45.5	52.5
10	-------	-------	76.0	75.2	75.2	70.0	63.0	55.0	52.0	43.0	39.0	37.0	40.5	41.8	46.0
11	-------	-------	74.2	76.2	77.2	79.0	80.0	70.0	63.0	57.0	50.0	45.0	42.0	39.6	40.0

Hours.	September, 1881.														
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	35.0	38.0	53.0	51.0	72.0	82.0	86.0	90.7	79.4	66.0	56.0	47.0	43.0	42.0	37.0
1	33.0	29.0	43.0	38.0	51.5	66.0	78.0	87.0	81.2	73.3	62.0	53.0	47.0	41.5	34.0
2	33.0	24.0	31.0	22.0	33.3	44.8	59.0	73.0	75.0	73.0	66.0	57.7	51.0	42.5	32.0
3	38.0	24.0	20.0	11.0	18.0	25.0	39.5	60.0	60.0	61.6	62.0	59.0	53.0	45.2	35.0
4	42.0	30.0	22.0	9.5	10.5	12.0	21.5	35.0	42.0	49.8	56.0	57.0	57.0	50.3	39.5
5	48.0	39.7	28.0	12.0	10.5	2.0	7.0	25.0	25.5	34.5	44.0	52.0	53.0	51.1	44.5
6	52.0	46.9	38.5	25.0	14.0	9.0	11.0	10.0	15.0	27.0	36.0	43.0	48.0	52.5	49.0
7	54.0	52.5	50.0	39.6	32.5	17.5	18.0	8.0	12.5	18.0	28.0	37.2	46.0	51.5	52.0
8	49.0	58.5	62.0	54.0	49.0	34.0	29.0	20.0	19.0	16.0	23.0	32.0	42.0	49.0	53.0
9	43.0	59.8	69.0	67.7	65.8	55.9	49.5	36.0	27.0	24.0	15.6	30.0	38.0	45.8	50.0
10	41.0	54.0	66.0	73.0	78.0	70.5	69.0	54.0	44.0	34.0	21.0	31.0	37.0	42.0	46.0
11	35.5	45.6	58.1	70.6	81.8	80.0	86.0	68.0	59.0	47.0	31.0	36.0	37.0	38.5	40.0
Noon.	29.0	34.0	46.0	61.0	76.1	80.0	93.0	83.8	70.0	60.5	50.2	42.0	40.0	36.8	37.0
1	25.0	24.5	29.0	43.0	59.0	71.0	84.0	86.0	77.0	69.0	59.0	49.0	44.0	35.5	31.0
2	24.0	18.7	17.0	24.0	39.2	51.5	75.0	76.0	76.0	73.0	66.1	55.0	48.0	37.3	30.0
3	27.5	18.0	10.0	12.5	20.5	29.0	54.0	60.0	67.0	67.0	65.5	59.0	52.0	41.0	31.0
4	35.8	23.0	11.0	11.5	12.0	9.0	23.0	43.0	54.0	55.0	62.0	60.0	55.0	45.5	36.0
5	42.0	34.0	18.5	11.7	8.2	3.0	20.0	36.0	37.0	47.0	52.0	58.0	54.0	51.0	41.3
6	51.3	45.0	31.5	23.0	14.0	6.0	13.0	17.0	29.0	35.0	47.0	56.0	59.0	55.0	49.0
7	†61.0	58.8	49.7	41.5	28.5	16.0	17.0	20.0	21.0	28.5	40.0	49.0	57.0	57.0	56.0
8	63.0	67.1	66.5	60.0	51.0	32.0	31.5	21.0	20.5	26.7	35.0	44.0	53.7	58.0	59.0
9	62.0	71.9	72.0	76.0	67.0	56.0	49.5	35.5	30.0	35.0	30.0	40.0	50.5	52.0	58.0
10	55.0	69.3	76.5	84.0	82.0	71.0	69.0	52.2	41.0	36.5	31.0	37.5	45.6	49.5	54.0
11	47.0	59.0	68.5	83.0	86.2	84.0	83.0	67.0	58.0	46.0	35.0	40.0	43.0	43.0	47.0

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	September, 1881.												October, 1881.		
	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	39.0	45.0	52.0	61.0	69.0	74.0	84.0	86.0	81.0	76.8	71.0	58.0	52.0	51.0	36.0
1	31.5	35.0	39.0	46.0	53.2	61.5	71.5	76.0	77.0	79.0	71.5	64.0	56.0	52.0	34.0
2	28.0	28.0	30.0	38.0	37.0	44.0	55.0	65.0	66.0	73.5	70.0	66.0	60.0	55.0	36.0
3	26.5	28.0	25.0	30.0	23.0	22.0	36.0	44.0	50.5	61.0	67.0	64.0	62.8	56.5	41.5
4	29.7	30.0	21.6	15.0	21.0	17.0	24.0	27.0	36.0	49.0	44.0	59.0	62.0	60.0	47.5
5	36.6	34.0	26.0	21.0	17.0	12.0	16.0	18.0	25.0	32.5	36.0	51.5	60.0	62.0	54.0
6	45.0	44.0	33.0	31.0	25.0	20.0	19.5	16.0	18.0	23.0	30.6	39.0	53.0	61.0	60.0
7	51.7	52.0	47.0	42.0	38.0	32.0	25.0	22.5	21.0	20.0	19.8	33.0	†45.1	56.8	61.0
8	55.0	61.0	58.5	59.0	51.5	44.7	39.0	32.0	32.0	23.0	25.0	29.5	40.5	52.5	58.5
9	56.5	64.5	66.0	67.0	68.0	63.0	58.0	46.5	42.0	31.0	30.0	29.0	37.0	44.5	53.2
10	53.0	63.5	69.0	73.0	78.0	76.0	73.0	65.0	57.0	45.5	38.0	32.0	37.0	39.0	46.0
11	46.8	58.0	66.0	74.0	79.8	82.0	85.0	81.0	72.0	59.9	50.0	44.5	40.0	35.5	36.1
Noon.	40.0	50.0	55.0	62.0	73.0	82.0	86.5	86.8	80.0	74.0	62.0	50.0	45.0	36.0	29.5
1	30.0	42.0	43.0	49.0	59.0	70.0	78.0	81.5	84.0	79.1	70.0	61.0	51.5	39.5	26.5
2	25.5	31.0	32.0	34.0	40.0	53.8	64.9	72.0	79.0	79.0	73.0	66.5	59.5	42.5	34.0
3	25.0	26.0	25.0	22.0	32.0	37.0	48.0	56.5	66.5	70.0	70.7	70.0	64.5	49.2	36.0
4	28.0	25.9	21.0	19.0	25.0	27.0	32.0	39.9	51.4	59.0	64.0	66.5	69.5	59.0	44.0
5	36.0	32.0	†21.5	23.0	19.0	20.6	24.0	27.0	37.5	47.0	53.0	62.0	69.0	64.0	53.0
6	45.0	41.0	35.0	37.0	21.0	25.0	25.0	21.0	27.0	38.0	45.0	54.0	65.0	66.5	61.9
7	55.0	53.0	50.0	42.0	36.3	32.0	29.0	26.5	26.5	27.0	29.0	47.0	61.0	66.0	68.7
8	62.0	63.0	62.5	56.0	51.0	50.5	41.0	35.0	32.0	31.0	32.0	42.0	53.0	61.5	68.9
9	65.0	70.0	71.0	68.8	68.0	64.6	52.0	47.0	44.0	38.0	34.0	39.0	51.0	55.0	65.0
10	63.0	71.3	74.0	76.0	80.0	78.0	74.0	64.0	56.0	45.0	41.0	39.0	46.0	46.5	57.9
11	55.0	62.0	71.5	76.0	82.0	85.0	83.0	76.0	70.0	58.0	46.0	45.0	47.0	40.0	48.0

Hours.	October, 1881.														
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	37.8	47.0	57.0	67.0	76.0	86.0	85.0	77.0	69.0	61.0	50.0	45.0	40.0	35.0	42.0
1	31.0	38.0	42.0	48.0	58.0	72.5	79.0	77.0	73.0	66.0	52.0	48.0	46.0	32.0	34.5
2	25.0	28.0	27.0	28.0	31.0	54.0	63.0	69.0	68.5	71.0	56.0	52.0	50.8	38.0	33.5
3	29.2	24.0	12.0	22.0	21.0	33.5	44.0	52.0	57.0	63.0	59.0	55.0	55.0	38.0	38.0
4	37.0	28.0	17.0	8.5	13.0	18.0	30.0	31.0	42.0	50.0	56.0	55.0	58.7	47.0	42.5
5	48.0	37.0	24.0	12.0	9.0	12.0	22.0	21.0	29.5	42.0	48.0	52.0	58.0	51.0	48.7
6	55.0	49.0	39.0	22.0	15.5	9.0	10.0	10.5	20.0	37.0	39.0	46.0	57.0	54.0	55.0
7	64.0	62.0	53.5	39.0	31.0	22.0	14.0	11.0	15.5	30.5	32.0	42.0	53.5	56.0	61.0
8	68.5	76.0	70.0	58.0	50.0	38.0	27.0	20.5	19.0	25.0	31.0	40.0	50.0	57.0	63.0
9	67.2	80.2	81.0	75.8	68.0	56.0	49.5	35.6	30.0	28.0	29.0	36.8	45.5	52.0	60.5
10	60.5	75.5	84.3	85.0	84.2	75.0	64.0	51.0	40.0	37.0	33.0	36.5	33.0	47.5	54.5
11	48.0	62.9	78.0	83.0	90.5	89.0	75.0	68.0	53.0	47.3	40.0	38.0	31.0	47.0	46.0
Noon.	40.0	54.0	64.0	72.0	87.0	92.0	85.0	77.5	67.0	56.5	48.0	41.0	31.5	39.0	42.0
1	33.0	34.0	49.0	55.6	74.3	84.0	83.0	80.5	71.0	64.0	55.0	47.0	35.0	36.5	36.0
2	26.0	26.0	30.0	37.0	53.0	67.0	72.0	76.0	76.0	67.0	59.0	53.0	48.0	35.5	32.5
3	27.0	20.0	20.0	23.0	30.5	46.0	52.0	63.8	66.0	68.0	62.0	58.0	50.0	40.0	34.0
4	34.0	21.0	17.0	10.0	18.5	31.0	32.0	58.0	56.0	62.0	65.0	60.0	59.0	46.5	41.0
5	46.0	37.5	24.5	9.0	12.1	16.8	24.0	42.0	43.0	49.0	56.0	60.0	60.0	55.0	49.0
6	56.0	50.0	39.0	25.0	17.0	15.0	17.5	22.0	34.0	45.0	50.0	58.0	62.0	61.0	57.0
7	70.5	66.0	55.0	40.0	35.0	24.5	18.0	19.0	27.0	39.0	44.0	56.0	62.0	66.0	63.0
8	77.9	78.0	71.0	59.0	47.0	34.0	27.0	26.0	26.5	32.0	39.0	50.0	59.0	65.0	66.5
9	79.2	82.0	85.5	79.0	67.0	51.0	42.0	33.0	31.0	30.0	36.5	46.0	54.0	60.0	65.0
10	72.0	81.0	88.5	86.0	81.0	66.0	60.0	47.0	40.0	33.0	37.0	42.0	48.0	53.0	59.0
11	60.0	74.0	81.0	86.0	88.0	82.7	74.0	60.0	52.0	40.0	40.0	40.0	38.0	46.0	50.0

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	October, 1881.													November, 1881.		
	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	41.0	49.0	54.0	60.0	65.0	71.0	73.0	72.0	69.5	57.0	50.1	41.0	37.1	25.0	29.0	22.7
1	32.0	30.0	32.0	44.0	46.0	60.0	65.0	68.5	70.0	62.0	59.0	50.0	42.0	23.0	22.5	19.0
2	29.0	21.0	25.0	27.0	31.0	40.5	49.0	56.0	62.0	61.5	62.0	59.5	47.0	29.0	21.5	14.0
3	28.0	18.0	17.5	15.0	18.5	23.0	29.0	40.0	45.0	54.0	62.0	†59.0	54.0	36.0	26.5	16.5
4	33.5	21.0	16.0	9.0	7.0	9.0	13.0	25.0	33.5	44.0	58.0	58.0	58.0	43.5	31.4	22.2
5	40.0	31.0	25.0	14.7	4.0	5.0	3.5	7.0	20.0	30.0	43.0	54.5	61.0	51.5	41.3	27.0
6	49.0	43.0	33.0	29.0	12.5	10.0	5.0	5.0	7.0	19.0	32.0	49.0	59.5	56.0	52.8	31.6
7	57.0	57.0	46.0	40.0	32.0	26.0	14.0	10.0	10.0	14.0	†26.0	40.0	54.0	57.2	61.8	*50.0
8	63.0	65.0	61.0	56.0	45.0	41.5	31.0	19.0	14.5	16.0	24.0	34.0	49.0	55.0	63.0	69.0
9	65.0	70.5	73.0	70.0	65.5	58.0	48.0	36.0	26.5	19.0	25.0	32.0	40.5	47.0	53.5	71.5
10	61.0	68.5	74.0	75.0	75.5	74.5	66.0	53.0	42.0	32.0	30.0	31.5	36.0	39.0	47.5	70.2
11	55.0	61.0	68.3	73.0	79.0	83.2	76.8	71.0	58.0	45.0	38.0	34.0	33.0	31.0	40.0	53.5
Noon.	46.0	47.0	58.0	64.0	71.0	79.0	79.5	78.0	69.5	56.5	48.0	41.0	34.0	25.5	29.4	40.0
1	36.0	35.0	44.5	50.0	58.0	71.0	73.0	76.0	73.0	67.8	59.3	48.0	38.0	24.0	21.0	27.5
2	29.0	30.0	30.0	36.0	42.0	64.0	61.0	68.9	69.0	70.0	64.0	54.0	44.0	27.5	21.5	20.0
3	27.0	20.0	21.0	21.0	25.0	34.0	42.0	55.0	58.0	65.0	66.6	64.5	52.0	37.0	26.0	19.0
4	31.0	20.0	21.0	14.0	14.7	20.0	29.0	39.0	47.0	58.0	64.5	67.5	57.6	47.0	37.9	25.8
5	40.0	34.0	24.0	18.0	10.5	16.0	17.0	25.0	32.0	45.0	57.0	66.0	63.5	54.0	50.7	39.9
6	50.0	46.0	37.0	25.0	18.0	18.0	13.0	16.0	24.5	35.0	49.0	62.0	65.0	63.5	62.9	58.3
7	60.5	59.5	51.0	39.0	32.0	27.0	17.0	17.0	16.0	26.0	39.0	53.0	61.0	66.0	66.0	66.2
8	66.5	69.0	64.0	55.0	48.0	41.0	27.0	25.0	19.0	24.5	33.0	46.0	53.5	62.5	68.8	70.5
9	70.0	73.0	72.0	67.0	62.0	56.5	43.0	35.0	26.0	27.0	30.0	39.0	45.0	55.0	65.1	72.5
10	67.0	70.0	73.0	73.0	73.0	70.0	58.0	49.0	37.0	33.0	29.5	35.0	37.0	45.0	54.2	66.0
11	57.0	63.0	69.0	70.0	76.0	76.0	66.0	62.0	47.0	42.0	34.0	34.0	29.0	33.3	40.3	54.0

Hours.	November, 1881.															
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	39.0	56.0	69.0	75.0	78.0	79.0	69.0	63.0	47.0	36.0	37.0	29.0	26.5	26.0	31.0	41.0
1	18.3	39.0	53.0	64.0	70.0	73.0	70.0	66.0	54.0	48.0	41.0	31.0	26.5	24.0	30.0	28.0
2	14.0	24.0	37.0	44.0	58.0	62.0	63.0	67.0	58.0	51.0	47.0	35.0	29.0	22.3	26.0	21.0
3	12.0	10.0	23.0	25.0	37.0	46.0	50.0	62.0	†55.9	53.0	49.0	40.0	31.0	25.0	22.0	20.5
4	15.0	7.0	16.0	15.0	25.0	30.0	35.0	51.0	44.0	51.0	52.0	43.0	38.5	36.0	30.0	24.5
5	27.6	22.0	17.5	14.5	18.0	23.5	27.0	34.0	36.0	46.0	50.0	48.5	50.0	44.0	40.0	34.0
6	42.6	34.0	26.0	20.0	19.0	20.0	22.0	24.0	28.0	36.0	45.0	48.0	54.0	47.0	49.0	48.0
7	58.0	53.0	43.0	28.0	27.0	23.0	21.0	20.0	23.0	31.0	40.0	46.0	55.0	†56.0	59.0	59.0
8	68.2	71.0	60.0	43.0	40.0	32.0	25.0	22.0	22.0	27.0	36.0	44.0	53.0	61.5	65.0	69.5
9	77.0	83.0	78.0	68.0	54.0	43.0	32.0	28.0	27.0	26.0	33.0	37.5	48.0	57.0	66.0	74.0
10	76.8	89.0	90.0	85.5	73.0	57.0	46.0	40.0	31.0	28.0	32.0	34.0	42.0	51.0	62.0	73.0
11	68.0	84.0	93.0	92.8	75.0	72.5	60.0	54.0	39.0	35.0	30.7	33.5	37.0	40.5	53.0	62.5
Noon.	53.0	70.0	79.0	90.6	80.3	76.0	71.0	64.5	48.0	43.0	35.0	33.0	33.0	35.0	43.0	52.0
1	37.0	53.5	63.0	79.0	76.0	74.0	75.0	70.0	55.0	50.0	41.0	33.5	32.0	32.0	36.0	38.0
2	24.0	35.0	47.0	62.0	†67.0	70.0	73.0	70.8	61.0	56.0	47.0	38.5	33.0	30.0	28.5	29.0
3	19.0	23.0	30.0	45.0	47.0	54.0	62.0	64.0	61.0	59.5	52.0	43.5	38.0	32.0	27.5	23.5
4	19.0	18.0	18.0	30.0	37.0	41.0	50.0	59.5	56.0	59.0	59.0	49.5	43.0	38.5	31.0	25.0
5	26.9	24.0	19.0	22.0	27.0	29.0	39.0	48.0	48.0	56.0	54.0	54.0	54.0	45.5	41.5	35.0
6	44.8	37.0	29.0	21.0	21.0	22.0	28.0	38.0	41.0	50.0	50.0	56.5	57.0	54.0	52.0	44.5
7	59.3	53.0	40.5	39.0	29.0	20.0	22.0	29.0	35.7	42.0	46.0	55.5	59.0	61.0	63.0	59.0
8	69.3	70.0	56.5	47.7	39.0	28.0	24.0	25.0	29.0	37.0	36.0	51.0	57.0	63.0	70.0	68.0
9	78.0	82.0	70.0	63.0	54.0	38.0	32.0	27.0	27.0	31.0	34.0	43.0	49.5	58.5	69.0	72.5
10	77.0	86.5	79.5	75.0	67.0	52.0	45.0	36.0	28.0	29.5	30.0	39.0	41.5	52.0	63.5	71.0
11	68.3	80.0	81.0	81.0	74.0	63.0	60.0	42.0	32.0	31.0	28.0	31.0	32.0	41.0	53.0	60.0

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	November, 1881.											December, 1881.				
	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	47.0	58.0	66.0	76.0	77.0	74.0	68.0	56.0	40.0	30.0	24.0	28.0	37.0	37.0	47.0	53.0
1	34.0	43.0	52.0	63.0	72.0	74.0	72.0	63.0	50.0	40.0	28.0	28.5	31.0	31.0	40.0	40.0
2	22.0	26.0	35.0	47.0	56.0	67.0	70.0	68.0	55.0	47.0	36.0	32.0	29.0	25.0	22.0	27.0
3	16.0	22.0	21.0	31.0	38.0	59.0	59.0	63.0	59.0	56.0	45.0	40.0	34.0	22.0	16.0	17.0
4	17.0	12.0	14.0	17.0	24.0	35.0	46.0	56.0	56.0	60.0	52.0	50.0	41.0	26.0	14.0	14.0
5	26.0	15.0	11.0	13.0	16.0	20.0	41.0	42.0	49.0	60.0	57.0	60.5	51.5	33.5	27.0	15.0
6	40.0	27.0	19.0	16.0	15.0	12.0	29.0	31.0	41.0	54.0	61.0	69.5	62.0	41.0	38.0	28.0
7	56.0	44.0	34.0	28.0	17.0	11.0	17.0	22.0	32.0	47.0	59.0	72.5	73.0	49.5	56.0	43.0
8	69.0	60.0	53.0	42.0	28.0	22.0	17.0	15.0	24.0	40.0	53.0	72.0	78.0	70.0	69.0	60.0
9	77.0	75.0	73.0	52.0	45.0	34.0	28.0	17.0	22.0	33.0	44.0	69.0	79.0	79.8	76.0	74.0
10	80.0	81.2	82.0	75.0	61.0	50.0	38.5	28.0	24.5	27.0	37.0	58.0	70.0	75.0	79.0	83.0
11	74.0	77.0	86.0	88.5	77.0	67.0	54.0	41.0	30.0	27.5	31.0	49.0	57.0	64.0	73.0	83.0
Noon.	62.0	65.0	79.0	88.0	86.0	80.0	68.0	50.0	40.0	31.0	30.0	41.0	44.0	51.0	69.0	72.5
1	50.0	53.0	71.0	74.0	82.0	82.0	79.0	62.0	50.0	34.0	32.0	39.0	35.0	40.0	55.0	58.0
2	37.0	36.0	54.0	60.0	72.0	77.0	82.0	71.0	60.0	45.0	38.0	41.0	32.0	25.0	31.0	43.0
3	32.0	23.0	36.0	46.0	56.0	65.0	73.0	72.0	67.0	58.0	49.0	45.0	34.0	23.0	22.0	27.0
4	24.0	18.0	28.0	25.0	42.0	49.0	61.0	64.5	68.0	63.0	56.0	55.5	39.0	26.0	18.0	21.0
5	27.5	19.0	20.5	20.0	26.0	35.0	48.0	56.0	63.0	68.0	63.0	68.5	53.0	37.0	23.0	20.0
6	39.0	28.0	24.0	20.0	20.0	20.0	35.0	43.0	59.0	61.0	67.5	75.5	63.0	49.0	36.0	28.0
7	54.0	42.0	36.0	28.0	18.0	18.0	29.0	28.0	49.0	54.0	67.0	80.0	72.0	63.0	51.0	43.0
8	68.0	55.0	52.0	43.0	23.0	20.0	22.0	23.0	34.0	47.0	†62.0	79.0	74.5	71.5	62.0	56.0
9	74.0	68.0	68.0	56.0	39.0	29.0	24.0	20.0	26.0	36.0	53.0	69.0	71.0	75.0	70.0	68.0
10	77.0	74.5	80.5	69.0	54.0	44.0	32.0	22.0	22.0	28.0	42.0	57.0	63.0	72.0	72.0	74.0
11	71.0	75.0	82.5	76.0	67.0	56.0	43.0	31.0	28.0	23.0	33.0	47.0	49.0	59.0	68.0	74.0

Hours.	December, 1881.															
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	66.0	72.0	74.0	70.0	66.0	57.0	54.0	40.0	36.0	27.0	23.0	22.0	28.0	29.0	44.0	52.0
1	52.0	57.0	69.0	67.0	66.0	62.0	58.0	52.0	45.0	33.0	24.0	21.0	19.0	21.0	25.0	37.0
2	30.0	50.0	55.0	59.0	60.0	66.0	62.0	58.0	51.0	38.0	29.0	23.0	18.0	14.0	13.0	20.0
3	19.0	26.0	42.0	48.0	49.0	61.0	60.0	62.0	56.0	44.0	36.0	28.0	22.0	14.0	7.0	9.0
4	13.0	13.0	34.0	31.0	39.0	45.0	53.0	58.0	57.0	49.0	42.0	36.0	26.0	21.0	10.0	5.0
5	13.0	10.0	22.0	20.0	29.0	35.0	50.0	53.0	56.0	53.0	48.0	45.0	36.0	30.0	17.0	9.0
6	22.0	19.0	12.0	16.0	20.0	24.0	47.0	45.0	52.0	52.0	52.0	52.0	47.0	44.0	30.0	19.0
7	31.0	27.0	15.0	11.0	16.0	21.0	39.0	38.0	43.0	47.0	52.0	58.0	57.0	58.0	45.0	35.5
8	49.0	43.0	23.0	15.0	17.0	20.0	27.0	36.0	*39.5	44.0	50.0	58.0	63.0	69.5	58.0	52.0
9	67.0	58.0	44.0	30.0	31.0	27.0	32.0	35.0	36.0	36.0	47.0	55.0	61.5	70.0	74.0	70.0
10	77.0	71.5	60.0	55.0	49.0	38.0	36.0	36.0	34.0	35.0	41.0	47.0	60.5	67.0	75.0	80.0
11	83.0	80.0	71.0	70.0	55.0	49.0	45.0	40.0	35.0	32.0	37.0	40.0	52.0	57.0	72.0	80.0
Noon.	80.0	81.0	77.0	76.0	66.0	59.0	54.0	49.0	38.0	29.0	30.0	33.0	41.0	43.0	62.0	71.0
1	66.0	73.0	74.0	77.0	71.0	68.0	62.0	55.0	44.0	32.0	29.0	28.0	31.0	32.0	44.0	56.0
2	48.0	61.0	62.0	70.0	68.0	69.0	66.0	62.5	49.0	38.0	29.0	28.0	22.0	22.0	30.0	37.0
3	30.0	48.0	51.0	56.0	57.0	65.0	66.5	65.0	55.0	45.0	35.0	30.0	24.0	17.0	20.0	22.0
4	20.0	26.0	36.0	43.0	46.0	56.0	64.0	66.0	57.0	54.0	41.0	33.0	27.0	18.0	14.0	14.0
5	15.0	21.0	19.0	31.0	38.0	48.0	56.0	60.0	56.0	59.0	51.0	42.0	31.0	29.0	16.0	15.0
6	18.0	19.0	14.0	21.0	26.0	37.0	44.5	53.0	51.0	56.0	56.0	49.0	36.0	42.5	27.0	21.0
7	31.0	23.0	16.0	14.0	17.0	27.0	36.0	44.0	46.0	52.0	58.0	55.0	51.0	55.0	41.0	36.0
8	47.0	35.0	27.0	23.0	16.0	22.0	30.0	39.0	40.0	48.0	54.0	57.0	59.0	62.1	54.0	51.0
9	61.0	50.0	42.0	41.0	24.0	20.0	27.0	31.0	32.0	39.0	47.0	55.0	59.0	70.5	62.0	65.0
10	70.0	61.0	55.0	48.0	36.0	32.0	28.0	27.0	28.0	29.0	36.0	48.0	53.0	64.0	68.0	75.0
11	73.0	69.0	64.0	63.0	46.0	48.0	36.0	31.0	26.0	24.0	27.0	38.0	43.0	56.0	62.0	77.0

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	December, 1881.										January, 1882.					
	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	67.0	75.0	78.0	67.0	54.0	41.0	34.0	23.5	21.0	21.0	32.0	40.5	46.0	55.0	66.0	69.0
1	52.0	65.0	75.0	76.0	65.0	†54.3	38.5	27.0	25.5	19.5	28.0	32.0	42.0	41.2	57.0	64.0
2	35.0	57.5	62.0	69.0	65.0	60.0	45.0	39.5	30.0	20.5	21.0	22.0	33.0	27.5	43.0	51.0
3	19.0	40.0	43.0	55.0	57.0	59.0	52.5	47.0	36.0	24.0	23.0	17.0	12.5	13.0	28.0	34.0
4	9.0	15.0	23.0	36.0	47.0	53.0	54.0	54.0	44.0	31.0	28.5	19.0	10.0	6.0	17.0	20.0
5	8.0	8.0	13.0	24.0	36.0	45.0	51.0	57.0	57.0	39.0	34.0	25.0	13.0	8.0	11.0	11.0
6	12.0	9.0	5.0	12.0	16.0	33.0	38.0	51.0	59.5	46.5	48.0	35.5	21.0	15.0	12.0	9.0
7	30.0	20.0	10.0	5.0	10.0	22.0	24.0	46.5	58.5	52.0	53.0	48.0	35.0	28.0	19.0	14.0
8	42.0	32.0	20.0	9.0	9.0	15.0	19.0	40.0	54.0	59.5	57.0	56.0	50.0	42.0	34.0	24.0
9	60.0	52.7	34.0	21.0	13.0	15.0	18.0	33.0	50.0	56.0	61.0	63.5	63.5	56.5	50.0	39.0
10	80.0	71.0	54.0	38.0	24.0	20.0	20.0	28.0	44.0	52.0	58.0	71.0	71.0	69.5	65.0	57.0
11	87.0	85.5	72.0	57.7	39.0	30.3	24.0	26.0	34.5	44.5	53.0	64.8	70.5	74.5	75.0	70.0
Noon.	†83.0	89.0	74.0	73.0	54.0	42.2	31.0	25.0	30.0	35.0	50.0	55.5	61.0	70.0	77.0	76.0
1	71.5	81.7	76.0	79.0	67.0	53.0	43.0	34.0	27.0	28.7	42.0	43.0	48.0	58.0	71.0	73.0
2	52.0	70.0	70.0	77.0	73.0	61.5	52.0	41.0	29.3	26.0	31.0	30.5	33.5	45.0	57.0	62.0
3	34.0	49.0	58.0	65.7	69.0	67.0	†56.0	47.8	35.0	28.0	26.0	20.5	21.0	30.0	41.0	47.0
4	22.0	28.0	44.0	47.6	60.0	60.6	60.0	54.0	42.0	32.5	27.0	17.0	11.8	19.0	25.0	32.0
5	15.0	17.0	27.0	37.0	41.0	52.0	58.0	57.0	50.0	43.5	36.0	21.0	11.7	15.0	16.0	19.0
6	14.0	11.5	15.0	19.0	27.0	39.0	51.5	56.0	55.5	52.0	46.0	†32.3	20.0	18.0	14.0	12.0
7	21.0	15.0	11.0	11.0	17.0	25.0	40.5	54.8	56.5	60.0	53.0	42.0	31.0	27.0	20.0	14.0
8	37.0	24.0	14.8	9.5	11.0	19.0	30.0	46.0	53.0	62.0	62.0	52.2	45.0	39.0	31.0	24.5
9	52.0	39.0	26.0	12.0	11.0	13.0	22.0	36.6	46.0	59.0	63.5	58.0	53.0	52.0	45.0	37.0
10	66.0	52.0	39.0	26.0	17.0	16.0	17.5	28.0	36.0	48.0	59.0	61.0	60.0	63.0	58.0	52.0
11	74.0	69.0	56.0	39.0	29.0	21.0	19.5	22.0	28.0	41.0	51.0	56.0	61.0	68.0	66.0	63.0

Hours.	January, 1882.															
	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	68.0	63.0	61.0	53.0	44.0	37.0	34.2	35.0	32.1	26.0	41.5	45.6	61.0	77.0	87.3	80.7
1	66.5	67.5	66.0	65.0	53.0	45.5	42.0	39.5	35.0	23.0	32.0	34.0	48.0	66.0	79.3	78.7
2	55.5	59.0	64.5	69.0	60.5	53.0	48.0	48.0	40.0	22.5	30.5	22.5	31.8	48.0	65.3	68.2
3	40.0	46.6	55.3	58.0	58.3	58.5	52.5	56.5	45.5	26.0	27.6	17.3	19.5	36.0	37.9	48.7
4	24.0	31.5	42.5	45.5	47.0	52.0	54.0	61.0	51.0	32.0	30.0	18.0	15.0	22.0	20.8	25.7
5	13.0	18.0	28.0	33.0	38.0	47.5	51.0	65.5	57.5	40.9	40.0	25.5	17.5	18.0	10.3	8.7
6	8.0	11.0	20.0	25.5	30.8	42.4	46.0	65.5	60.3	49.5	53.5	37.0	24.7	23.0	9.3	— 0.3
7	11.0	10.0	14.0	17.6	25.5	37.0	41.8	62.0	66.0	57.0	62.0	52.2	36.5	28.0	20.3	1.7
8	21.0	16.0	17.0	16.0	21.5	31.0	37.4	58.3	65.5	61.2	70.0	68.5	58.5	42.3	33.3	12.7
9	36.5	28.0	26.0	21.0	22.3	27.0	33.5	54.0	61.0	61.8	75.0	78.0	74.0	67.3	53.3	31.7
10	49.0	41.5	37.0	36.0	28.0	30.0	33.8	48.5	55.0	57.0	74.8	82.5	86.0	84.3	72.3	52.7
11	61.0	53.5	51.5	43.0	37.0	36.5	36.0	45.0	49.0	†53.0	68.0	78.5	88.0	93.3	90.3	73.2
Noon.	73.5	68.0	62.0	53.0	45.0	45.2	39.0	43.7	42.0	44.9	59.0	71.5	80.0	†91.9	93.3	85.9
1	73.0	74.0	70.0	62.0	54.0	52.0	45.0	44.0	39.0	41.0	50.0	58.0	66.0	80.3	†85.3	88.2
2	66.0	68.0	70.0	67.0	59.3	58.5	49.8	49.0	39.5	37.0	36.0	40.5	50.0	63.1	75.3	78.1
3	54.5	59.5	68.0	62.3	60.0	60.0	54.8	55.0	41.0	40.5	28.3	28.5	32.0	42.3	54.3	61.2
4	39.0	44.0	58.5	54.0	56.0	58.0	57.0	58.5	47.0	44.0	28.0	23.0	24.0	25.5	42.8	43.7
5	23.0	33.0	44.5	44.0	49.0	54.0	58.7	63.0	54.2	54.0	35.0	27.0	20.5	16.8	18.8	23.3
6	15.0	21.0	25.0	32.0	39.5	45.0	56.2	63.0	59.2	59.0	44.9	38.0	24.5	17.3	10.8	7.7
7	12.0	15.0	17.5	22.0	30.0	37.0	50.3	62.0	61.0	64.0	56.3	50.0	35.0	24.5	21.1	3.7
8	18.8	17.0	17.0	17.0	25.0	28.0	43.5	57.3	57.2	73.0	67.0	63.0	49.6	36.8	25.7	9.7
9	27.0	23.0	21.0	18.0	18.0	23.0	37.0	48.0	51.0	70.5	70.5	72.0	66.5	55.3	38.2	21.7
10	40.0	36.0	29.0	23.0	21.0	21.2	32.0	39.5	40.5	62.0	68.0	76.0	77.0	73.1	57.3	40.7
11	53.0	48.0	41.0	34.0	27.0	25.7	31.5	34.5	33.3	52.5	59.5	72.5	79.5	84.9	71.2	61.7

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	January, 1882.									February, 1882.						
	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	77.7	67.7	50.7	30.5	24.2	21.2	25.5	33.2	41.7	45.7	55.7	61.7	66.7	64.7	56.7	61.7
1	82.9	69.7	62.2	40.2	*34.7	26.7	24.7	29.0	34.7	33.7	49.7	50.7	58.7	60.7	59.7	65.7
2	80.2	73.7	73.7	51.7	43.2	33.7	27.7	27.9	27.9	27.1	33.1	37.7	44.7	52.2	51.2	59.1
3	66.7	67.2	71.7	58.7	50.7	39.7	30.2	28.9	24.7	20.2	23.2	26.4	30.2	36.6	37.2	48.2
4	51.7	52.7	64.7	57.7	53.5	45.9	34.7	33.2	26.8	16.7	13.7	14.2	14.2	21.1	20.7	33.7
5	29.7	34.7	50.2	51.0	54.7	50.9	42.7	38.2	35.9	20.0	12.2	10.7	5.7	9.7	11.2	17.7
6	8.2	19.7	36.7	40.2	50.9	55.2	50.2	47.6	47.2	28.7	18.7	12.7	4.8	4.2	— 0.8	11.7
7	— 2.2	8.7	†24.2	30.7	45.5	52.2	55.7	55.7	56.2	42.4	30.7	23.2	11.7	7.7	0.2	6.3
8	7.7	7.7	15.9	21.7	35.7	50.2	57.3	66.2	59.0	57.2	45.7	37.2	25.7	18.2	8.7	10.7
9	23.7	16.7	15.7	16.7	29.7	45.7	54.7	70.7	66.5	65.7	60.2	54.7	44.7	32.7	24.7	23.7
10	42.7	29.7	22.3	17.7	26.2	40.7	49.5	68.5	68.9	72.6	71.2	69.7	61.7	49.7	41.7	38.7
11	64.7	38.7	33.7	23.7	25.5	35.2	40.7	61.2	63.7	71.7	74.2	76.7	71.7	62.9	54.7	54.3
Noon.	81.7	57.7	47.7	33.7	29.5	32.2	34.2	50.7	53.7	63.6	68.3	75.5	73.7	69.7	63.7	66.7
1	88.7	76.7	60.7	42.7	35.0	32.7	29.4	40.6	42.2	51.7	54.7	64.8	67.7	65.7	65.7	71.4
2	83.2	80.7	69.7	52.5	42.7	37.2	27.7	31.9	30.6	37.7	39.9	48.7	49.7	52.9	55.7	69.5
3	76.7	74.7	67.7	58.1	48.7	42.7	29.7	29.2	21.7	25.5	24.7	33.7	39.7	37.7	43.7	56.7
4	58.2	63.7	59.7	56.7	51.7	47.5	33.7	32.9	20.7	19.2	13.7	20.3	19.7	22.7	27.1	42.2
5	37.7	48.7	48.7	50.7	52.7	51.2	39.7	40.5	24.7	20.7	10.5	14.7	9.7	9.7	13.7	26.2
6	20.2	31.7	34.2	42.3	49.2	55.4	45.7	48.7	33.0	26.7	15.7	12.7	7.0	2.2	3.4	13.7
7	17.7	18.3	22.7	34.2	42.9	53.9	50.7	56.7	44.5	38.2	29.7	20.9	12.7	3.7	0.2	7.7
8	12.3	12.2	13.2	24.7	35.5	48.7	51.7	61.7	52.7	49.2	42.0	33.7	23.7	12.7	5.7	9.7
9	19.2	13.7	9.7	16.7	29.2	41.7	48.9	63.7	57.7	56.7	55.5	47.8	36.7	25.7	18.2	19.7
10	33.5	21.2	11.7	14.2	21.7	34.9	43.9	58.9	59.7	64.7	63.7	59.2	50.7	38.5	35.7	33.2
11	50.2	34.7	19.3	17.7	19.7	28.2	37.7	50.7	56.2	64.2	66.7	66.7	61.4	52.7	50.2	47.7

Hours.	February, 1882.															
	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	61.5	58.4	48.4	40.4	31.4	27.1	24.9	31.6	47.6	65.4	81.4	85.3	87.3	88.8	70.8	52.0
1	68.2	65.4	57.9	49.2	39.4	30.4	25.4	25.4	36.4	54.4	65.4	73.3	80.6	91.3	79.8	64.3
2	67.2	70.6	65.4	57.4	45.5	35.5	28.0	21.9	28.4	31.9	51.4	52.3	68.3	84.8	78.3	69.4
3	62.2	65.5	63.9	59.9	54.4	41.9	31.9	22.7	21.7	23.4	36.9	35.6	45.8	65.9	65.5	65.3
4	46.9	54.4	53.4	58.6	56.9	48.4	37.4	29.5	23.4	18.9	23.9	16.8	31.5	45.3	49.3	55.6
5	32.7	38.8	46.9	52.4	55.4	54.1	45.4	41.8	31.9	23.4	13.8	5.3	7.7	22.6	29.1	38.8
6	23.7	32.9	39.7	47.5	50.4	55.4	53.7	50.0	43.7	35.4	20.7	4.3	3.1	6.9	11.7	24.6
7	18.2	24.4	30.9	39.9	44.9	55.4	58.4	59.7	59.0	51.7	35.9	15.5	4.0	2.3	1.6	13.3
8	16.7	22.9	27.4	32.4	40.4	52.9	59.4	67.5	72.4	68.4	54.4	31.8	20.8	11.8	2.3	7.8
9	26.9	27.9	27.4	29.1	36.4	†46.4	56.6	70.7	81.4	85.4	75.7	55.3	42.5	29.5	13.3	10.3
10	37.8	37.4	32.2	29.9	34.4	42.4	52.1	67.4	82.9	93.4	90.3	75.3	60.3	49.3	30.3	21.3
11	51.7	50.4	41.4	33.9	35.4	39.6	44.4	60.4	76.4	89.4	96.8	92.3	86.3	74.3	48.8	36.3
Noon.	65.5	61.2	50.4	40.4	38.2	33.0	37.4	50.4	64.2	78.9	90.3	92.3	95.3	89.3	64.3	51.3
1	71.7	70.4	60.4	48.4	41.4	33.4	32.4	39.4	49.0	63.4	75.3	81.3	92.3	93.0	76.3	63.3
2	71.7	73.4	64.5	54.4	44.4	35.4	29.4	33.4	35.4	45.4	53.8	62.6	67.3	83.3	74.4	66.3
3	63.7	68.9	63.4	58.4	49.1	40.4	31.2	28.5	25.5	27.0	31.3	37.3	45.3	65.8	64.3	65.8
4	51.7	60.4	59.4	57.4	51.0	44.4	34.4	31.4	23.4	19.4	16.3	19.3	34.3	43.8	47.3	58.3
5	35.9	48.4	52.4	53.6	51.9	48.9	41.7	38.6	28.9	20.2	9.3	4.3	16.3	20.8	30.3	43.6
6	25.7	34.9	41.2	47.9	51.7	54.2	49.2	48.2	41.4	28.4	11.3	0.3	4.3	6.3	22.5	28.5
7	15.7	24.9	30.9	38.4	46.7	54.3	55.9	59.9	56.4	42.4	31.8	7.8	4.3	1.1	1.3	17.3
8	13.2	18.9	25.2	30.2	40.6	50.1	58.7	68.9	70.4	58.6	42.3	24.3	16.6	4.8	0.3	10.8
9	20.1	19.4	22.4	24.9	34.2	42.9	56.4	73.1	80.9	76.2	60.8	43.6	32.3	16.6	6.8	11.3
10	30.4	26.4	24.4	23.4	29.0	35.3	49.4	69.6	83.7	88.4	78.8	63.3	54.0	33.3	18.3	16.8
11	44.4	36.7	30.[illegible]	27.4	27.0	28.6	40.4	60.4	79.7	90.0	88.3	81.5	73.8	51.3	34.5	28.8

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	February, 1882.					March, 1882.										
	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	43.3	42.3	37.3	36.8	37.3	42.3	53.3	68.6	66.6	72.5	78.3	75.3	79.3	74.1	69.8	59.3
1	54.3	52.1	43.3	38.3	34.8	36.3	41.8	57.3	55.3	61.3	68.8	76.3	78.3	76.3	76.3	69.3
2	64.8	60.3	49.3	42.3	34.3	30.8	34.3	42.8	40.8	43.6	54.3	66.8	64.4	64.3	74.7	73.8
3	66.9	63.8	55.8	47.3	37.3	28.8	28.8	31.3	25.9	25.8	37.2	35.8	51.8	53.8	65.6	71.2
4	61.8	65.3	62.3	51.6	†44.5	32.3	27.8	28.8	19.8	12.8	20.6	22.8	36.3	43.7	55.7	62.3
5	53.3	61.8	64.3	56.1	48.3	39.8	32.3	30.8	16.3	11.3	13.3	10.6	19.5	28.6	41.3	52.1
6	41.6	56.3	64.3	61.3	56.3	49.3	†44.3	39.3	23.3	14.3	11.3	6.5	10.8	15.3	28.6	40.5
7	30.3	47.8	61.8	63.3	63.8	59.3	59.5	51.8	35.3	24.6	19.3	11.7	8.2	16.0	21.8	32.3
8	22.8	40.3	57.3	62.3	66.8	66.8	69.1	67.0	48.8	39.4	33.3	22.3	21.3	20.3	22.3	28.3
9	21.0	35.8	51.8	60.3	66.8	71.3	80.5	79.5	68.3	57.9	53.3	41.8	36.3	31.8	†30.8	31.5
10	24.5	35.8	46.5	55.4	62.6	70.4	84.3	83.8	79.3	70.3	69.3	59.3	54.3	48.3	44.3	39.8
11	35.6	37.6	42.3	50.3	55.3	64.4	78.3	80.5	80.3	78.3	78.8	70.3	70.8	60.3	59.3	52.5
Noon.	46.3	42.3	42.3	44.3	47.6	55.8	70.3	70.8	74.3	75.4	80.5	76.3	79.3	72.3	68.3	62.1
1	58.0	49.0	44.3	40.3	39.8	43.5	53.3	57.5	62.3	65.3	68.8	73.9	78.3	76.3	73.3	71.5
2	64.8	54.5	49.3	40.3	34.3	35.4	41.3	41.3	49.5	49.8	54.8	60.3	67.4	71.3	73.3	74.0
3	66.6	59.2	53.6	42.3	33.3	30.3	36.3	29.3	32.3	29.3	35.3	44.3	52.1	61.3	65.1	70.5
4	63.3	61.3	57.6	46.3	36.1	30.2	32.3	21.8	21.3	19.3	19.8	29.3	35.3	51.3	54.3	63.2
5	56.3	60.8	60.3	51.3	43.6	35.8	36.3	21.8	15.3	9.3	9.3	13.3	19.8	32.3	40.3	53.3
6	46.5	56.0	60.8	56.3	50.3	44.3	46.3	28.8	19.8	12.1	6.3	5.3	9.3	19.3	28.3	41.5
7	35.3	49.3	57.3	60.8	58.4	55.3	58.8	43.3	33.3	20.3	14.3	8.3	9.3	13.3	21.1	32.1
8	29.8	35.1	51.8	61.3	62.3	64.1	72.3	55.3	48.5	36.1	26.1	19.8	18.3	16.3	20.1	25.8
9	24.8	26.5	46.8	58.3	62.8	69.3	79.3	67.8	64.3	53.3	43.1	35.3	28.3	25.8	26.5	28.3
10	27.8	33.3	41.7	53.3	57.5	69.3	82.3	75.1	74.3	68.3	59.3	52.8	47.1	41.3	36.8	34.3
11	33.6	33.8	37.8	46.3	51.3	64.3	78.8	75.1	78.3	77.3	71.3	68.8	63.3	57.8	48.9	44.6

Hours.	March, 1882.															
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
1	56.3	45.3	36.4	32.3	34.5	37.8	48.3	60.8	70.8	83.6	80.8	80.3	*63.2	52.3	42.3	38.8
2	65.6	53.8	40.3	32.3	26.8	24.8	28.3	42.5	57.5	72.6	79.5	85.6	76.5	64.3	50.7	44.1
3	71.8	60.3	48.6	34.1	25.2	18.3	17.3	22.2	35.7	56.4	68.4	83.1	77.4	69.5	58.8	50.3
4	71.3	64.3	55.9	39.6	27.3	14.4	5.0	6.1	13.8	33.3	50.8	68.4	70.8	69.3	63.2	50.5
5	66.9	63.4	59.0	48.4	34.3	15.8	2.4	− 1.1	− 1.9	11.3	32.1	52.5	58.4	63.4	62.0	58.4
6	59.6	60.3	61.3	56.3	44.3	27.3	7.3	− 2.2	− 6.3	− 3.2	13.0	30.6	42.2	54.8	57.5	58.3
7	50.8	56.6	61.3	61.3	55.3	41.5	25.3	6.7	− 2.1	− 4.7	0.3	14.2	29.5	42.7	51.3	57.0
8	41.3	51.3	58.8	63.9	64.5	54.4	39.8	25.2	7.7	1.2	1.0	8.6	19.6	31.3	43.4	52.6
9	36.5	46.3	53.9	63.8	69.8	64.3	58.6	47.3	30.3	20.4	11.4	12.3	16.8	24.2	36.2	46.8
10	35.2	41.3	46.8	60.5	69.1	71.2	71.3	65.3	52.3	38.9	32.4	28.8	23.1	21.8	32.1	41.2
11	39.3	38.7	42.7	54.2	63.3	69.3	75.3	†75.4	70.3	63.4	51.2	45.7	35.6	27.8	32.1	38.1
12	47.1	39.4	39.3	46.0	53.2	60.5	68.2	75.8	81.3	78.8	71.1	62.7	48.7	38.6	37.2	35.7
Noon.	53.8	42.8	37.3	38.8	40.9	46.3	54.3	64.3	78.3	83.3	81.6	75.2	62.1	48.7	41.3	37.4
1	59.9	46.7	38.9	34.1	30.5	29.6	38.4	47.7	65.6	75.3	82.3	81.3	71.8	56.8	48.8	40.5
2	65.2	51.8	43.3	33.3	22.5	20.3	20.5	27.8	43.3	57.4	73.3	77.4	73.1	*63.0	55.3	44.3
3	65.5	56.4	47.4	36.2	20.4	7.8	4.3	8.8	20.3	37.8	53.3	64.8	67.3	63.3	58.3	†48.4
4	62.4	58.8	52.2	42.7	24.5	7.3	− 0.7	− 8.2	2.8	14.8	37.9	48.8	55.5	58.9	58.3	51.3
5	55.8	58.3	56.5	49.3	33.6	16.3	3.1	−10.5	− 4.3	− 1.2	18.6	29.3	42.6	49.6	55.3	52.5
6	47.8	56.4	58.3	56.3	45.8	27.3	13.8	− 4.7	− 5.4	− 7.2	4.3	16.2	29.3	39.3	49.5	*51.2
7	37.8	48.5	56.8	61.5	55.3	42.8	30.3	9.4	1.3	− 0.7	− 1.1	9.6	18.9	28.6	42.3	49.8
8	33.3	42.3	52.3	62.9	62.9	56.3	50.1	33.8	15.8	12.8	11.6	13.7	16.9	21.3	35.1	45.1
9	30.8	36.3	47.0	60.3	65.5	66.3	64.5	53.3	35.3	32.5	25.8	20.8	24.3	20.3	32.3	39.8
10	32.6	†32.6	41.3	53.3	60.9	68.3	73.8	70.8	64.8	54.3	47.8	35.3	33.3	24.5	31.5	36.6
11	37.8	33.3	35.8	43.8	49.5	61.3	72.3	77.3	81.3	73.3	69.1	50.3	41.3	33.3	35.3	34.8

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	March, 1882.				April, 1882.											
	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	34.8	37.3	47.3	44.8	48.8	58.8	64.1	75.3	83.2	83.3	78.8	70.2	53.8	41.1	38.8	26.3
1	39.4	35.3	42.3	36.4	36.7	46.0	51.6	64.3	73.2	78.8	79.3	74.7	63.3	51.9	47.3	32.7
2	40.5	36.1	38.8	27.8	24.8	31.5	27.5	48.6	58.3	67.5	70.6	70.2	63.6	57.3	53.4	40.4
3	44.9	39.3	38.4	24.8	18.5	20.6	22.3	33.4	43.4	51.3	55.2	61.2	58.6	56.5	59.3	47.5
4	50.4	44.2	41.5	26.4	15.4	14.5	13.5	21.9	29.5	36.1	39.1	47.5	47.6	51.3	60.2	51.8
5	55.3	52.5	47.5	32.6	20.6	17.3	8.3	13.8	15.8	21.8	27.6	34.0	36.1	44.2	57.3	54.3
6	59.0	60.3	56.4	42.7	29.5	26.4	17.4	16.8	15.2	14.3	19.3	23.1	25.3	37.1	51.4	53.5
7	58.6	64.3	63.3	52.3	43.3	39.3	29.5	28.6	22.1	19.2	17.3	16.9	15.2	27.3	42.5	49.3
8	56.5	65.7	68.3	61.8	57.5	53.5	44.3	42.2	34.6	29.3	23.9	18.5	11.9	20.8	34.8	41.3
9	50.9	63.3	69.3	67.3	67.3	65.3	62.3	59.3	50.8	43.3	34.8	26.8	17.8	20.3	28.4	34.3
10	46.4	58.0	65.4	65.4	68.9	72.3	72.8	72.3	66.8	58.8	49.3	39.8	23.8	24.3	27.4	28.8
11	41.5	51.1	55.5	58.2	65.2	71.1	75.3	80.0	78.3	71.8	63.8	50.6	34.3	34.1	28.6	25.3
Noon.	36.5	42.5	46.4	45.4	54.3	61.3	67.6	76.3	79.3	78.7	71.1	60.8	44.5	40.5	33.1	24.8
1	36.6	38.4	35.6	35.7	42.4	47.8	56.3	66.3	72.5	75.8	72.5	65.3	51.5	46.8	38.3	26.3
2	37.3	35.9	29.7	26.3	28.3	30.3	40.3	51.3	57.8	64.3	65.5	63.6	54.8	52.6	45.2	31.3
3	41.4	37.7	27.3	18.8	17.4	19.3	22.8	33.[illegible]	40.8	46.8	54.6	56.8	49.8	54.3	55.3	37.3
4	45.3	41.6	30.2	18.8	16.3	12.3	10.3	21.5	25.3	33.8	40.3	43.8	41.5	51.3	51.8	43.3
5	50.6	48.8	37.6	25.8	20.3	10.4	4.3	11.8	11.8	19.6	21.6	26.5	28.1	45.4	49.3	48.3
6	53.6	57.5	45.5	35.6	28.3	18.7	13.8	14.8	9.6	11.2	12.7	13.5	17.8	37.3	45.3	48.3
7	55.8	64.3	54.3	48.3	42.3	32.4	28.1	32.0	15.4	13.7	9.9	9.3	11.7	31.8	40.2	46.4
8	54.3	66.3	62.3	58.3	55.3	37.1	41.7	41.6	29.9	22.5	15.9	12.4	9.1	25.6	31.8	41.5
9	51.3	65.3	64.8	65.5	66.1	52.3	60.4	59.8	48.1	40.3	28.7	18.1	11.6	21.3	26.3	35.3
10	45.3	61.8	62.3	66.1	71.3	71.6	72.7	76.2	65.5	53.8	44.1	28.5	20.7	26.2	23.4	30.6
11	41.3	54.3	54.3	59.6	68.3	71.9	78.4	83.5	79.3	69.9	58.8	41.3	29.3	30.3	24.2	24.3

Hours.	April, 1882.															
	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	21.5	23.2	35.3	49.4	67.3	80.3	85.3	81.3	74.3	69.8	59.3	39.9	41.3	31.5	29.3	30.5
1	22.3	17.0	25.1	33.1	49.4	61.3	74.8	76.3	74.3	76.4	68.2	53.0	47.8	35.3	28.3	27.6
2	27.5	17.0	18.3	19.6	32.3	40.4	54.4	63.8	68.4	75.9	71.5	60.5	54.3	42.6	30.8	26.1
3	34.3	23.2	17.7	12.8	16.4	22.5	33.8	43.4	53.3	68.4	67.3	63.8	58.8	48.6	36.8	30.5
4	41.8	32.6	24.3	16.8	10.8	9.3	14.5	23.8	36.3	54.9	59.2	61.1	61.0	51.7	44.1	36.7
5	50.3	43.3	34.8	24.4	15.8	6.8	4.4	6.7	19.5	41.0	48.7	55.7	58.5	55.6	49.6	43.1
6	54.9	53.7	49.8	40.2	28.3	14.5	4.8	1.9	7.4	27.1	36.3	47.3	53.8	55.3	53.3	50.3
7	55.8	61.5	62.6	56.7	42.8	30.3	15.5	5.0	5.3	20.3	25.6	38.6	47.3	51.5	54.3	56.4
8	51.3	63.2	70.5	68.9	60.4	47.5	30.8	16.3	11.7	18.5	18.4	31.2	39.1	46.4	51.6	57.5
9	44.5	61.3	71.8	77.3	†70.3	64.3	49.3	34.3	26.3	26.3	19.8	26.3	32.3	39.3	45.3	54.1
10	35.8	51.6	66.3	77.3	77.6	78.5	66.3	49.6	51.3	37.8	26.3	27.3	29.6	33.3	38.3	48.7
11	26.7	41.3	55.8	68.7	80.3	82.8	76.3	67.3	60.3	51.4	36.8	38.1	30.3	20.3	31.3	41.5
Noon.	21.9	27.3	40.3	54.8	69.6	77.3	79.1	73.3	67.8	63.3	44.3	41.3	33.3	17.3	25.8	32.8
1	17.0	20.3	24.8	37.5	52.3	63.3	68.3	70.3	68.6	71.3	51.5	48.5	37.8	18.8	23.3	25.5
2	18.8	15.6	16.3	21.3	29.3	42.8	48.3	57.3	63.8	71.1	56.8	56.6	43.1	†27.3	24.3	22.3
3	23.8	16.3	12.3	9.3	16.1	23.0	31.3	39.3	53.3	65.3	55.3	58.3	†47.6	39.3	29.3	25.1
4	31.8	22.8	15.8	8.8	5.3	5.3	11.3	20.8	38.3	50.3	49.6	57.6	50.8	44.3	34.7	30.6
5	39.4	34.3	25.6	14.3	7.3	0.3	— 0.6	4.3	21.8	38.6	39.9	52.3	48.5	48.3	42.7	38.3
6	48.3	44.5	38.4	26.6	18.6	4.3	— 2.2	— 2.1	10.3	25.9	28.1	45.7	47.8	50.3	49.1	47.1
7	53.5	56.3	45.8	45.1	33.3	17.3	4.5	0.3	8.7	18.9	19.6	36.8	42.3	49.5	52.3	54.7
8	53.3	63.8	58.3	61.8	52.9	35.3	18.1	9.5	15.5	18.8	15.8	30.8	36.5	45.4	51.6	59.6
9	48.8	64.3	72.1	75.9	70.3	55.6	37.4	25.3	25.5	26.1	18.0	28.3	32.3	39.2	47.8	59.7
10	40.5	58.6	74.3	83.6	85.0	75.3	57.2	43.6	39.3	34.6	24.9	29.8	30.2	33.8	42.2	54.6
11	31.3	48.4	63.8	78.9	89.3	86.3	74.3	63.4	56.3	46.3	32.8	34.3	31.3	30.9	36.3	45.8

TABLE IV.—*Hourly readings of tide staff*—Continued.

Hours.	April, 1882.		May, 1882.													
	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	36.7	35.3	47.4	53.9	64.8	68.6	72.3	73.4	71.1	62.3	46.5	35.3	23.2	15.9	20.3	27.3
1	30.6	25.5	33.3	38.8	50.3	49.5	65.3	71.3	73.6	70.1	58.3	47.8	31.3	19.3	16.9	19.3
2	25.3	18.9	23.5	25.3	35.6	37.7	51.6	61.2	69.1	71.3	62.9	56.6	40.8	26.2	19.4	14.9
3	25.5	14.8	13.9	15.1	21.8	27.3	37.3	46.7	58.3	63.9	62.3	60.8	49.8	36.3	28.3	16.7
4	30.3	19.1	13.3	5.2	9.5	16.9	19.9	31.3	46.6	52.6	57.5	60.3	54.7	45.8	36.5	25.4
5	37.5	25.6	20.9	7.3	10.1	4.7	7.8	16.9	29.3	40.1	47.6	55.8	55.3	53.6	47.3	38.2
6	48.3	34.8	29.4	20.7	16.8	7.7	3.3	8.6	15.9	25.3	36.8	47.3	51.8	55.8	56.5	51.3
7	57.4	46.3	42.1	32.4	27.7	16.2	9.3	11.3	12.7	16.9	25.3	37.4	45.3	54.3	62.1	60.8
8	61.7	55.5	52.9	46.9	42.8	27.3	22.9	17.7	17.3	14.3	16.9	25.6	35.8	47.4	61.3	64.3
9	62.7	58.3	61.6	57.7	55.8	43.9	38.8	29.6	23.0	17.8	15.8	19.3	26.1	36.5	53.8	62.8
10	56.9	56.6	62.6	64.6	64.1	57.3	51.7	44.2	36.3	27.1	19.1	18.3	17.8	28.3	43.3	55.3
11	47.5	49.8	56.8	64.1	66.3	64.5	62.6	57.0	48.6	39.6	28.3	21.3	15.5	19.3	31.3	42.3
Noon.	36.7	36.7	46.1	56.5	60.6	63.6	66.2	64.6	59.1	50.2	38.0	26.5	17.4	14.2	20.8	28.9
1	25.4	24.3	†30.5	42.1	47.1	53.8	61.7	65.6	64.6	57.5	46.5	36.4	22.2	11.3	14.3	15.9
2	18.8	15.6	16.7	25.3	39.7	38.3	49.5	60.5	63.3	60.9	53.2	42.4	29.3	17.3	13.8	11.8
3	16.4	9.3	6.6	12.3	24.1	20.1	31.6	44.3	55.7	57.8	56.1	49.0	37.9	24.7	18.3	12.3
4	19.3	10.3	5.3	4.6	4.3	6.3	14.3	26.8	41.8	47.6	53.1	50.8	46.3	35.9	25.8	17.2
5	30.4	17.0	10.2	5.3	0.5	− 1.6	2.8	11.0	25.3	32.6	44.8	49.3	48.6	44.4	38.2	28.3
6	42.3	29.8	21.3	14.4	6.8	− 1.3	− 1.0	3.6	12.3	21.1	32.6	43.8	49.5	52.5	52.6	43.3
7	52.4	43.3	38.2	28.4	18.8	8.4	4.7	4.7	9.4	12.3	23.1	35.1	46.1	55.4	61.0	58.8
8	60.9	54.8	52.3	45.5	35.4	24.3	15.8	13.1	10.4	10.2	17.3	26.5	38.3	51.4	64.1	68.8
9	60.6	63.2	64.0	63.0	52.9	40.3	31.6	26.0	17.3	12.8	14.6	20.0	30.5	45.4	61.3	74.3
10	58.4	63.2	68.4	71.3	64.5	58.4	51.3	41.3	31.4	21.3	17.5	16.9	22.3	36.3	53.5	71.0
11	45.2	56.5	64.0	72.7	71.1	70.7	66.3	57.5	47.0	33.8	24.0	17.3	17.3	28.3	40.5	58.8

Hours.	May, 1882.															
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	44.3	58.3	71.7	82.3	84.5	81.3	71.5	64.3	51.1	37.3	31.3	28.0	29.3	32.9	38.8	47.7
1	31.6	43.3	57.9	70.3	78.9	81.3	77.1	72.3	59.3	45.3	37.8	31.3	29.5	28.3	32.3	37.6
2	20.8	29.9	43.3	53.1	64.3	67.9	73.4	72.7	64.8	48.9	44.7	36.9	32.8	27.5	28.2	30.3
3	15.5	16.6	21.4	34.3	47.1	58.5	63.2	68.3	63.5	54.8	50.3	44.4	38.4	30.6	29.3	26.2
4	19.6	13.5	11.8	19.9	31.3	40.1	50.7	58.8	57.6	53.7	52.3	49.5	44.7	37.3	33.6	27.3
5	29.5	18.1	11.1	11.8	18.0	26.3	36.6	45.6	49.1	48.6	50.7	52.8	50.5	44.4	42.3	32.3
6	44.5	29.9	19.5	14.2	12.3	15.6	24.3	33.4	39.3	41.1	46.6	52.8	54.3	50.7	51.5	43.2
7	59.1	46.3	34.9	26.3	17.8	14.8	17.8	22.9	28.5	30.3	42.1	49.5	54.5	54.6	58.3	56.3
8	69.3	61.0	50.3	40.1	30.3	23.9	19.8	19.9	22.1	22.1	34.3	42.3	50.3	55.3	61.8	62.4
9	73.3	72.2	66.7	56.9	46.1	35.8	27.2	24.1	20.3	18.0	27.2	35.8	43.3	51.4	61.3	64.3
10	68.4	74.2	76.1	69.5	60.8	51.3	39.2	32.1	24.3	18.3	22.8	28.8	35.9	44.3	55.8	62.0
11	58.4	68.9	76.8	77.1	72.3	63.3	51.8	43.3	31.8	22.3	21.3	24.3	29.8	35.6	46.4	52.8
Noon.	42.7	57.0	68.0	75.6	76.1	71.0	63.3	53.3	39.3	29.5	23.3	22.3	24.4	25.8	36.6	41.8
1	27.8	39.3	52.3	64.5	72.3	71.8	67.8	60.1	47.4	37.2	28.5	24.8	22.3	22.3	25.5	29.7
2	15.4	21.4	34.3	46.4	58.6	64.3	66.4	62.3	53.3	42.4	36.6	27.7	25.3	21.8	22.3	20.3
3	10.4	11.6	16.3	†29.3	38.8	50.8	56.8	57.3	54.8	46.6	41.9	36.8	30.4	24.3	22.4	16.3
4	11.4	6.8	9.2	16.0	24.5	34.0	44.8	48.3	49.3	47.1	45.8	43.8	37.7	29.8	26.3	16.2
5	19.3	9.3	6.3	8.3	13.5	21.3	31.3	35.3	41.3	44.4	48.3	49.3	44.8	38.3	35.5	23.3
6	33.3	19.8	12.3	9.3	8.7	11.5	18.9	26.3	32.5	38.3	47.1	51.9	52.1	48.3	46.3	34.3
7	49.2	35.3	25.5	17.3	13.0	12.3	15.3	18.1	24.3	32.0	42.1	51.3	54.3	56.3	58.4	47.5
8	64.8	53.8	42.3	32.1	22.3	18.0	17.8	17.9	18.1	27.3	35.3	47.3	53.8	62.1	66.8	60.5
9	77.5	69.3	61.7	49.3	38.4	28.3	25.3	22.3	16.9	23.3	30.8	41.5	50.8	61.3	70.2	68.0
10	80.8	80.3	77.3	68.3	56.2	44.3	37.9	30.3	20.9	23.6	27.6	37.3	45.3	56.3	66.9	68.6
11	72.8	80.3	84.6	81.3	73.2	60.3	52.2	40.3	28.8	26.3	25.8	32.3	39.3	47.3	58.8	63.0

TABLE IV—*Hourly readings of tide staff*—Continued.

Hours.	May, 1882.	June, 1882.														
	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	51.8	60.7	70.3	79.1	81.8	80.6	73.1	59.8	48.5	38.3	31.8	21.1	29.8	38.8	52.6	65.2
1	39.4	47.8	59.6	70.3	80.3	85.3	82.8	72.3	58.3	47.3	38.1	21.2	23.3	27.5	41.3	51.5
2	28.6	33.3	44.8	55.2	71.5	80.5	81.9	78.5	70.8	58.3	46.3	25.3	19.6	19.3	26.3	38.8
3	20.1	21.1	29.9	38.3	55.7	64.5	71.3	76.3	76.3	68.9	57.7	33.3	25.3	18.9	23.1	26.3
4	16.8	17.1	18.3	25.5	38.3	50.6	62.0	67.1	72.7	72.5	65.8	43.2	32.3	21.8	18.5	19.3
5	21.6	17.1	13.0	14.1	21.6	34.3	50.9	55.3	65.3	69.3	69.3	51.0	45.1	30.3	24.3	21.3
6	28.3	23.3	17.9	13.2	15.3	21.8	30.3	41.3	54.8	62.3	68.1	*54.5	53.7	41.4	35.2	26.2
7	44.3	36.3	26.3	19.7	18.1	16.3	21.1	28.8	42.8	51.3	63.0	58.1	60.5	52.3	48.1	44.3
8	54.7	48.4	40.3	30.8	25.8	21.8	17.8	21.6	32.3	40.8	54.3	53.3	62.4	59.3	58.5	54.0
9	61.1	60.0	53.7	46.8	38.6	40.8	22.5	20.8	24.3	30.1	41.3	45.3	56.7	61.3	65.3	64.0
10	62.3	66.3	64.8	58.8	51.8	44.3	33.3	25.8	23.9	25.5	32.3	34.1	48.3	58.3	65.3	71.0
11	56.9	65.9	69.0	67.7	64.8	58.4	47.8	35.8	28.8	25.1	27.3	24.2	35.6	46.8	58.3	71.0
Noon.	46.3	58.1	66.7	69.8	72.4	68.8	58.8	48.8	39.8	29.5	24.3	16.8	26.3	35.0	42.9	61.0
1	31.8	43.9	56.8	64.8	74.2	74.2	66.7	58.3	47.3	36.8	27.3	14.3	17.9	23.3	33.8	51.0
2	19.1	27.8	40.7	51.3	64.8	71.3	69.7	65.6	56.2	45.8	33.8	16.1	14.0	14.0	22.0	36.3
3	10.8	14.3	21.3	33.3	52.6	61.7	65.5	67.4	63.3	55.9	42.3	22.8	15.5	9.7	12.0	21.3
4	8.8	12.8	12.1	17.8	34.3	45.3	56.3	63.8	64.3	63.1	52.1	31.3	21.6	13.1	11.9	16.3
5	12.8	8.3	4.7	8.0	18.6	30.3	41.3	55.9	63.8	66.1	61.5	43.3	32.2	21.8	14.3	15.1
6	23.3	15.1	9.3	5.9	9.0	17.3	27.6	43.8	55.8	64.0	67.3	53.3	44.3	34.2	25.1	21.0
7	38.1	29.3	20.3	†11.8	†11.8	12.6	18.1	33.1	44.8	58.3	67.5	60.8	56.5	49.3	40.6	33.8
8	53.1	45.9	34.1	25.3	20.3	15.3	15.8	25.6	36.6	49.8	62.6	62.6	64.3	62.3	57.0	51.0
9	64.8	60.8	53.3	43.6	34.3	26.1	21.8	23.2	29.5	40.6	44.3	58.7	65.3	70.8	70.0	68.0
10	71.5	71.3	70.8	62.1	51.6	40.5	30.3	26.3	26.0	33.3	35.8	50.1	62.3	71.8	76.2	78.8
11	69.4	75.9	79.0	76.3	68.3	57.6	45.3	36.5	29.8	30.3	26.5	38.9	50.6	65.3	74.0	84.0

Hours.	June, 1882.															July, 1882.
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
0	79.0	83.7	83.3	78.2	68.9	59.0	50.0	45.8	36.0	31.0	30.3	32.0	37.0	46.3	57.0	67.8
1	68.0	75.0	80.8	80.4	74.5	68.4	59.0	53.0	42.0	35.4	31.2	31.1	32.8	36.0	45.0	--------
2	53.3	60.4	70.0	71.9	73.7	70.5	68.9	60.3	49.3	41.3	33.8	34.4	†28.9	27.3	31.8	--------
3	41.3	42.8	52.6	60.0	63.9	64.8	66.3	64.1	54.0	47.6	38.9	37.4	26.6	24.4	21.7	--------
4	22.3	30.9	38.5	44.2	54.0	54.7	55.4	64.3	55.0	52.0	44.2	40.6	28.4	23.2	18.6	--------
5	20.8	20.3	27.3	32.5	37.7	42.0	48.0	57.0	53.6	53.7	49.0	45.5	33.4	29.3	20.8	--------
6	22.3	16.8	21.8	21.9	29.2	33.1	38.6	49.8	46.5	52.0	52.0	50.0	40.5	37.5	29.8	--------
7	33.4	24.6	22.6	18.5	20.7	23.9	29.8	40.1	41.5	49.5	51.7	52.8	52.0	48.8	40.7	--------
8	45.4	34.7	30.4	22.3	20.1	18.6	25.7	32.6	33.9	41.8	47.8	53.5	55.7	56.0	51.9	--------
9	60.1	50.0	41.3	32.6	25.2	20.6	21.[illegible]	27.0	24.0	31.5	41.0	49.0	55.7	58.0	60.8	--------
10	70.0	63.1	53.5	47.5	36.2	26.6	24.5	26.8	22.0	26.0	32.0	41.5	49.3	59.0	64.8	--------
11	73.1	72.9	67.0	57.1	49.0	38.6	34.0	30.5	22.2	22.6	25.6	33.5	40.5	54.2	62.3	--------
Noon.	70.2	73.0	72.0	65.5	59.2	48.5	43.4	38.0	25.0	22.0	22.0	24.0	31.0	41.9	53.3	--------
1	60.1	67.8	71.0	67.5	65.0	56.3	52.0	45.5	30.0	24.0	22.8	21.7	23.0	30.0	39.8	--------
2	34.1	53.5	63.1	64.7	64.9	59.8	57.0	51.8	38.5	30.7	25.0	21.5	22.0	20.0	25.7	--------
3	28.3	37.8	†49.0	54.0	57.0	57.0	59.0	56.5	45.9	38.0	30.5	22.6	20.0	14.0	14.3	--------
4	18.1	25.4	33.8	41.3	45.5	49.5	56.3	54.9	50.0	44.0	37.0	30.0	21.0	12.2	10.3	--------
5	13.3	15.3	20.6	28.1	35.0	40.6	49.5	51.7	51.7	49.2	45.8	39.5	28.5	19.8	12.5	--------
6	15.8	13.1	14.5	18.4	24.5	31.6	40.7	45.8	49.8	52.2	51.0	48.1	40.0	30.4	21.6	--------
7	24.3	18.8	16.0	16.2	18.5	23.1	34.3	38.5	45.0	51.2	56.0	58.0	53.0	44.3	37.0	--------
8	39.6	30.1	22.3	21.3	19.1	20.3	29.0	30.2	39.5	47.5	56.0	60.0	61.2	58.6	50.8	--------
9	58.0	47.0	35.5	31.1	24.7	24.1	28.3	27.5	34.3	42.7	52.8	59.2	66.0	69.0	65.8	--------
10	73.6	64.0	53.2	44.7	36.7	31.6	31.0	27.0	31.1	37.0	46.5	54.8	65.0	72.1	75.3	--------
11	82.5	78.0	68.0	56.0	48.0	40.8	37.0	31.5	30.0	32.5	39.0	47.5	58.2	68.1	75.8	--------

The times and heights of the series of high and low waters observed from August 20, 1881, to July 1, 1883, are given in columns 1, 3, 4, 7, 8 of Table V below. The times noted in columns 3 and 4 are Washington mean time. The heights in columns 7 and 8 are measured from a horizontal plane passing 28.191 feet below the standard bench-mark established August 24, 1881, that is, they are the gauge readings affected with the corrections in Tables II and III. All values marked in the transcripts as interpolated by the observers are here indicated by an asterisk (*), interpolations during this reduction by a dagger (†). The heights were noted by the observers, and are here given, to tenths of inches, but, as heretofore remarked of the hourly heights, the last figure has little significance save as it evidences a praiseworthy endeavor on the part of the observer to secure precise results.

For economy of space other columns are inserted in Table V, to which we will have occasion to recur further on.

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, daily half-tide level, etc.*

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1881.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Aug. 19	8 02	------	------	------	------	------	------	------	29.8	SW.	2.8	+22.1	54.4
	(20 26)												
20	8 51	8 07	2 07	(11 41)	18 05	58.7	37.9	49.3	29.8	SW.	0.8	+20.6	54.2
	(21 14)	20 30	15 07	11 39	(18 41)	68.2	34.6						
21	9 38	9 07	3 07	(11 53)	18 16	62.4	33.5	49.6	29.7	SW.	0.2	+18.2	54.1
	(22 00)	21 07	15 07	11 39	(17 53)	75.3	32.9						
22	10 23	9 07	3 07	(11 07)	17 29	67.1	23.3	48.5	29.8	SW.	1.0	+15.0	54.0
	(22 44)	22 07	15 45	11 44	(17 45)	76.0	25.6						
23	11 06	10 30	4 07	(11 46)	17 44	70.8	25.7	49.1	30.0	SW.	1.5	+11.2	54.0
	(23 27)	*22 45	15 35	11 39	(16 51)	76.8	25.4						
24	11 49	11 15	4 15	(11 48)	17 09	70.8	20.8	46.1	30.1	SW.	2.8	+ 7.0	54.2
	------	23 07	17 00	11 18	(17 33)	77.2	17.0						
25	(0 09)	11 07	5 07	(10 58)	17 18	74.0	13.5	45.1	30.1	SW.	1.4	+ 2.5	54.5
	12 30	23 15	17 07	10 45	(16 58)	80.0	13.5						
26	(0 51)	------	6 07	------	17 37	------	12.9	46.7	29.9	S.	1.2	− 2.2	54.8
	13 12	12 07	17 07	(11 16)	(16 16)	76.7	17.0						
27	(1 33)	0 07	6 07	10 55	16 55	82.0	13.0	47.3	29.8	SE.	6.1	− 6.8	55.2
	13 55	12 07	18 07	(10 34)	(16 34)	80.0	15.0						
28	(2 17)	0 07	6 07	10 12	16 12	80.0	12.0	46.1	29.8	SE.	1.3	−11.2	55.6
	14 40	13 07	18 30	(10 50)	(16 13)	80.0	13.0						
29	(3 03)	1 07	7 07	10 27	16 27	76.0	12.0	45.2	29.9	NW.	0.2	−15.2	56.2
	15 27	*13 15	19 30	(10 12)	(16 27)	77.0	18.0						
30	(3 52)	1 20	*7 40	9 53	16 13	72.0	17.0	46.0	29.9	E.	2.4	−18.5	56.8
	16 17	*13 50	20 07	(9 58)	(16 15)	72.0	25.0						
31	(4 44)	2 07	8 07	9 50	15 50	69.8	23.0	48.5	29.7	NE.	3.5	−21.0	57.5
	17 11	*14 20	*20 40	(9 36)	(15 56)	71.0	34.0						
Sept. 1	(5 39)	3 07	9 15	9 56	16 04	66.0	30.0	50.1	29.6	NE.	2.0	−22.4	58.3
	18 08	15 25	*21 30	(9 46)	(15 51)	67.5	39.5						
2	(6 37)	4 07	11 07	9 59	16 59	63.0	31.0	48.7	29.8	E.	1.4	−22.4	59.0
	19 06	18 07	------	(11 30)	------	62.0	------						
3	(7 36)	*5 50	0 07	10 44	(17 30)	55.0	38.7	45.1	30.0	N.	4.9	−21.0	59.7
	20 06	19 07	12 07	(11 31)	17 01	57.0	30.0						
4	(8 35)	7 07	*1 15	11 01	(17 39)	54.0	33.0	42.3	30.2	N.	3.0	−18.3	60.3
	21 04	20 07	14 07	(11 32)	18 01	63.0	24.0						
5	(9 33)	8 20	2 30	11 16	(17 55)	60.0	23.0	42.4	30.0	NE.	2.4	−14.3	60.8
	22 02	20 40	14 35	(11 07)	17 31	72.0	17.0						
6	(10 29)	9 07	3 07	11 05	(17 34)	69.0	20.0	42.7	30.0	N.	2.3	− 9.3	60.9
	22 57	22 10	15 25	(11 41)	17 23	77.0	9.5						
7	(11 24)	10 10	4 15	11 13	(17 46)	73.1	9.0	44.1	29.9	NE.	2.5	− 3.8	60.8
	23 51	22 10	16 15	(10 46)	17 18	85.0	11.2						
8	------	10 50	4 30	10 59	(17 06)	81.9	9.5	45.8	29.7	S.	2.0	+ 1.9	60.4
	(12 17)	23 07	17 07	(10 50)	17 16	86.2	8.2						
9	0 43	11 45	5 10	11 02	(16 53)	84.0	2.0	44.1	29.7	N.	1.0	+ 7.4	59.8
	(13 09)	------	17 15	------	16 32	------	2.0						
10	1 36	0 05	5 07	(10 56)	(15 58)	87.0	7.0	49.2	29.2	NE.	8.3	+12.3	58.9
	(14 02)	12 15	18 15	10 39	16 39	93.6	12.5						
11	2 28	0 15	6 20	(10 13)	(16 18)	93.5	3.0	48.1	29.4	S.	1.9	+16.4	58.0
	(14 54)	13 07	18 30	10 39	16 02	86.0	12.5						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind—		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1881.	h. m.	h. m.	h. m.	h. m.	h. m.	Inches.	Inches.	Inches.	Inches.			°	′
Sept. 12	3 20	0 45	7 15	(9 51)	(16 21)	81.4	11.0	46.5	29.6	SW.	8.4	+19.5	57.1
	(15 46)	13 10	*19 25	9 50	16 05	78.0	20.5						
13	4 13	1 07	7 35	(9 21)	(15 49)	73.3	11.0	45.0	29.8	N.	5.1	+21.5	56.3
	(16 39)	14 07	20 07	9 54	15 54	73.0	26.7						
14	5 05	2 07	9 20	(9 28)	(16 41)	66.0	13.0	44.5	29.9	NE.	2.0	+22.4	55.5
	(17 30)	14 40	21 25	9 35	16 20	73.5	26.0						
15	5 56	3 07	9 07	(9 37)	(15 37)	59.0	30.0	45.9	29.9	NE.	2.2	+22.2	54.9
	(18 21)	16 07	22 15	10 11	16 19	60.0	37.0						
16	6 46	4 07	10 25	(9 46)	(16 04)	57.0	36.0	47.9	29.9	E.	1.9	+20.9	54.5
	(19 10)	17 40		10 54		60.5							
17	7 34	6 07	*1 07	(10 57)	18 21	52.5	41.5	46.5	30.1	E.	1.7	+18.7	54.2
	(19 56)	19 50	13 07	12 16	(17 57)	61.0	35.5						
18	8 19	8 07	2 25	(12 11)	18 51	53.0	29.5	43.1	30.2	E.	0.7	+15.8	54.1
	(20 41)	20 20	14 25	12 01	(18 29)	61.0	29.5						
19	9 03	8 50	2 25	(12 09)	18 06	56.5	25.0	43.2	30.1	NE.	2.6	+12.2	54.1
	(21 24)	21 10	15 07	12 07	(18 26)	65.5	25.0						
20	9 46	9 35	2 20	(12 11)	17 17	65.0	27.3	46.4	30.0	E.	2.1	+ 8.1	54.3
	(22 07)	22 15	16 07	12 29	(18 43)	72.0	25.9						
21	10 28	10 30	4 17	(12 23)	18 31	69.8	20.7	45.9	29.9	E.	1.4	+ 3.7	54.5
	(22 49)	22 10	16 35	11 42	(18 28)	75.0	20.0						
22	11 11	10 55	3 40	(12 06)	17 12	74.0	15.0	46.2	29.8	E.	2.0	— 0.9	54.9
	(23 32)	22 35	16 07	11 24	(17 18)	76.6	19.0						
23	11 54	10 40	5 15	(11 08)	18 04	80.0	15.0	48.6	29.7	E.	2.4	— 5.6	55.3
		22 45	17 07	10 51	(17 35)	85.0	19.0						
24	(0 16)	11 30	5 10	(11 14)	17 16	84.0	10.0	49.4	29.7	E.	4.3	—10.0	55.7
	12 38	23 40	17 30	11 02	(17 14)	86.0	17.0						
25	(1 01)	11 40	5 35	(10 39)	16 57	87.0	11.0	51.3	29.7	E.	4.2	—14.2	56.2
	13 25		17 45		(16 44)		22.0						
26	(1 50)	0 07	6 15	10 42	16 50	86.0	10.0	50.5	29.6	E.	2.2	—17.7	56.7
	14 15	12 07	18 15	(10 17)	(16 25)	86.8	17.0						
27	(2 41)	0 30	6 40	10 15	16 25	85.5	13.0	51.7	29.5	NE.	0.9	—20.3	57.2
	15 08	12 50	18 30	(10 09)	(15 49)	84.3	26.0						
28	(3 35)	1 20	7 10	10 12	16 02	86.0	19.5	51.9	29.6	N.	6.3	—21.9	57.7
	16 03	13 30	19 25	(9 55)	(15 50)	79.5	26.5						
29	(4 31)	1 20	7 07	9 17	15 04	75.0	19.8	48.1	29.8	NE.	3.3	—22.3	58.3
	17 00	14 40	19 30	(10 09)	(14 59)	73.5	25.0						
30	(5 29)	2 30	8 35	9 30	15 35	66.7	26.0	49.1	29.8	E.	1.3	—21.3	58.8
	17 58	14 50	21 07	(9 21)	(15 38)	70.0	39.0						
Oct. 1	(6 26)	3 22	9 35	9 24	15 37	6[illegible].0	36.0	52.9	29.6	E.	1.4	—19.0	59.3
	18 55	16 15	22 20	(9 49)	(15 54)	70.0	45.0						
2	(7 22)	4 40	11 10	9 45	16 15	62.5	35.0	51.0	29.5	SE.	1.4	—15.5	59.7
	19 50	18 10		(10 48)		67.0							
3	(8 17)	7 10	0 45	11 20	(17 23)	61.5	33.0	45.8	29.5	NE.	2.5	—11.0	60.0
	20 44	19 35	13 07	(11 18)	17 17	69.4	26.5						
4	(9 10)	8 40	2 20	11 56	(18 03)	69.5	23.5	48.5	29.4	E.	1.4	— 5.9	60.1
	21 37	20 50	14 35	(11 40)	17 51	80.0	23.0						
5	(10 03)	9 10	2 50	11 33	(17 40)	80.5	24.0	50.0	29.5	SE.	0.2	— 0.4	60.1
	22 29	21 25	15 30	(11 22)	17 53	82.5	18.0						
6	(10 55)	10 15	3 45	11 46	(17 42)	84.8	10.0	49.5	29.6	E.	1.0	+ 5.1	59.8
	23 21	21 55	16 07	(11 00)	17 38	89.2	17.0						
7	(11 47)	10 40	4 18	11 19	(17 23)	85.8	8.0	47.9	29.7	NE.	3.9	+10.2	59.3
		22 37	16 19	(10 50)	16 58	87.0	8.0						
8	0 14	11 15	5 07	11 01	(17 20)	90.9	9.0	49.5	29.6	NE.	2.1	+14.7	58.6
	(12 40)	23 28	17 15	(10 48)	17 01	88.5	11.0						
9	1 07	11 48	5 40	10 41	(17 00	92.0	7.0	49.9	29.6	NE.	2.1	+18.2	57.9
	(13 33)	23 50	18 07	(10 17)	17 00	85.0	15.0						
10	2 00		6 20		(16 47)		9.0	48.3	29.8	E.	2.0	+20.7	57.0
	(14 27)	12 25	18 33	10 25	16 33	85.5	16.0						
11	2 54	0 35	6 40	(10 08)	(16 13)	80.0	10.0	47.0	29.9	NE.	1.3	+22.0	56.3
	(15 20)	12 50	18 45	9 56	15 51	80.6	19.0						
12	3 47	1 30	7 07	(10 10)	(15 47)	75.0	15.5	47.9	29.9	NE.	0.7	+22.1	55.5
	(16 12)	13 20*	19 30	9 33	15 43	77.5	26.5						
13	4 38	1 45	7 55	(9 33)	(15 43)	71.0	25.0	48.0	30.0	E.	0.5	+21.2	55.0
	(17 03)	14 30	20 40	9 52	16 02	70.0	30.0						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1881.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Oct. 14	5 27	2 30	8 43	(9 27)	(15 40)	60.0	29.0	46.7	29.9	E.	1.1	+19.3	54.5
	(17 50)	15 30	21 30	10 03	16 03	65.0	35.0						
15	6 14	3 30	9 30	(9 40)	(15 40)	55.5	36.0	47.9	29.7	E.	2.4	+16.6	54.3
	(18 36)	15 30	23 07	9 16	16 53	60.5	40.0						
16	6 59	4 30	10 45	(9 54)	(16 09)	60.0	31.0	47.3	29.5	E.	2.6	+13.2	54.2
	(19 20)	18 30		11 31		63.0							
17	7 42	7 50	0 45	(12 30)	17 46	57.5	32.0	47.5	29.7	SE.	1.1	+ 9.3	54.3
	(20 03)	19 45	13 45	12 03	(18 25)	66.5	35.0						
18	8 24	8 20	2 10	(12 17)	18 28	63.5	32.0	48.5	29.8	SE.	1.0	+ 5.0	54.5
	(20 45)	19 40	14 30	11 16	(18 27)	67.0	32.5						
19	9 00	8 40	2 30	(11 55)	18 06	66.0	28.0	46.3	30.1	SE.	0.9	+ 0.5	54.9
	(21 27)	21 07	14 50	12 01	(18 05)	70.0	25.0						
20	9 49	9 10	3 10	(11 43)	18 04	71.0	17.0	44.8	30.1	SE.	1.3	− 4.2	55.3
	(22 11)	21 25	15 15	11 36	(17 48)	74.0	18.0						
21	10 33	9 50	3 40	(11 39)	17 51	75.0	15.5	45.7	30.2	E.	2.6	− 8.7	55.9
	(22 56)	21 45	15 50	11 12	(17 39)	74.0	21.0						
22	11 20	10 10	4 07	(11 14)	17 34	75.5	9.0	42.7	30.4	E.	2.6	−13.0	56.4
	(23 44)	22 20	16 15	11 00	(17 19)	75.0	12.0						
23		10 45	4 40	(11 01)	17 20	79.5	4.0	42.4	30.4	SE.	1.3	−16.7	57.0
	12 09	22 40	16 35	10 31	(16 51)	77.0	9.5						
24	(0 35)	10 55	5 10	(10 20)	17 01	83.2	3.0	44.1	30.3	NE.	1.3	−19.6	57.5
	13 02	23 10	17 15	10 08	(16 40)	76.5	15.0						
25	(1 30)	11 45	5 25	(10 15)	16 23	80.0	2.0	42.5	30.3	NE.	1.4	−21.5	58.0
	13 58		18 07		(16 37)		13.0						
26	(2 26)	0 07	6 07	10 09	16 09	72.0	5.0	42.7	30.4	NE.	0.2	−22.1	58.4
	14 55	12 15	18 20	(9 49)	(15 54)	79.6	15.0						
27	(3 24)	0 40	6 07	9 45	15 12	70.0	7.0	41.1	30.4	E.	0.9	−21.4	58.7
	15 53	13 07	19 18	(9 43)	(15 54)	73.0	15.5						
28	(4 21)	1 10	6 55	9 17	15 02	63.0	14.0	42.3	30.2	SE.	0.8	−19.4	58.9
	16 50	14 07	20 05	(9 46)	(15 44)	70.0	24.0						
29	(5 17)	2 30	8 40	9 40	15 50	63.0	23.3	46.2	30.0	E.	1.3	−16.2	59.2
	17 45	14 50	21 23	(9 33)	(16 06)	67.0	29.5						
30	(6 12)	3 10	9 30	9 25	15 45	69.5	31.5	49.3	29.7	E.	0.9	−12.1	59.3
	18 39	16 07	22 30	(9 55)	(16 18)	67.5	33.0						
31	(7 04)	4 35	11 07	9 56	16 28	61.5	33.0	46.8	29.9	E.	1.6	− 7.2	59.3
	19 30	17 50		(10 46)		65.5							
Nov. 1	(7 55)	6 43	0 35	11 13	(17 31)	58.0	22.0	42.6	30.1	SE.	0.5	− 2.0	59.3
	20 21	19 17	12 35	(11 22)	17 05	66.0	24.0						
2	(8 46)	7 30	1 10	11 09	(17 15)	63.0	19.0	42.6	30.1	S.	0.2	+ 3.3	59.1
	21 11	19 45	13 15	(10 59)	16 54	69.0	21.0						
3	(9 36)	8 50	2 07	11 39	(17 21)	72.0	14.0	44.1	30.0	E.	0.6	+ 8.4	58.8
	22 02	20 25	15 07	(10 49)	17 56	73.0	19.0						
4	(10 28)	9 27	3 10	11 25	(17 34)	78.0	11.0	45.9	29.9	E.	2.3	+13.1	58.4
	22 54	21 45	15 40	(11 17)	17 38	78.5	18.0						
5	(11 20)	10 10	4 07	11 16	(17 39)	89.2	7.0	50.3	29.4	E.	1.3	+16.9	57.9
	23 47	22 07	16 07	(10 47)	17 13	86.5	18.0						
6		10 40	4 35	10 53	(17 15)	93.5	15.0	52.3	29.3	NE.	1.4	+19.8	57.3
	(12 14)	22 50	16 30	(10 36)	16 43	82.0	17.5						
7	0 41	11 17	4 45	10 36	(16 31)	93.1	13.4	51.8	29.5	NE.	2.8	+21.5	56.7
	(13 08)	23 30	17 20	(10 22)	16 39	82.0	20.2						
8	1 35	11 55	5 35	10 20	(16 27)	80.3	15.0	49.3	29.6	E.	1.8	+22.1	56.0
	(14 01)		18 07		16 32		21.0						
9	2 27	0 13	6 20	(10 12)	(16 19)	79.2	19.0	48.7	29.8	NE.	3.9	+21.5	55.4
	(14 52)	12 25	18 40	9 58	16 13	79.0	20.0						
10	3 18	0 50	7 07	(9 58)	(16 15)	71.0	21.0	46.7	29.8	NE.	2.2	+19.9	54.9
	(15 42)	13 25	19 30	10 07	16 12	75.8	21.0						
11	4 06	1 40	7 45	(9 58)	(16 03)	67.0	19.0	44.5	29.9	E.	0.4	+17.4	54.5
	(16 29)	14 07	20 20	10 01	16 14	70.8	24.0						
12	4 52	2 15	8 25	(9 46)	(15 56)	60.0	21.0	41.7	30.2	E.	1.5	+14.2	54.3
	(17 14)	14 25	20 30	9 33	15 38	61.5	26.0						
13	5 36	2 50	9 07	(9 36)	(15 53)	53.0	26.0	42.3	30.0	E.	0.5	+10.5	54.2
	(17 57)	15 30	22 07	9 54	16 31	62.0	29.5						
14	6 18	4 07	10 30	(10 10)	(16 33)	52.0	30.0	41.3	30.1	E.	0.4	+ 6.4	54.3
	(18 39)	16 30	22 50	10 12	16 32	55.0	28.0						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1881.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Nov. 15	7 00	5 07	11 30	(10 28)	(16 51)	48.5	32.5	41.3	30.0	o	0.0	+ 2.0	54.6
	(19 21)	18 07		11 07		56.5							
16	7 42	6 30	0 20	(11 09)	17 20	56.0	25.5	42.7	29.9	E.	0.5	— 2.6	55.1
	(20 03)	19 07	13 45	11 25	(17 24)	59.0	32.0						
17	8 25	8 07	1 30	(12 04)	17 48	61.5	22.0	43.8	29.9	E.	0.3	— 7.1	55.7
	(20 48)	20 20	14 15	11 55	(18 12)	64.0	29.0						
18	9 11	9 07	2 50	(12 19)	18 25	66.0	21.0	46.0	29.7	o	0.0	—11.5	56.3
	(21 35)	20 50	15 07	11 39	(18 19)	71.0	27.5						
19	9 59	9 07	3 07	(11 32)	17 56	74.0	20.5	47.3	29.5	N.	0.1	—15.4	57.0
	(22 25)	21 25	15 25	11 26	(17 50)	73.0	23.0						
20	10 51	9 43	3 30	(11 18)	17 31	80.0	15.5	48.4	29.4	E.	1.0	—18.7	57.7
	(23 19)	22 15	16 07	11 24	(17 42)	78.0	24.0						
21	11 47	10 30	4 20	(11 11)	17 29	82.2	10.0	46.7	29.6	NE.	1.5	—21.0	58.4
		22 45	16 25	10 58	(17 06)	75.0	17.0						
22	(0 16)	11 07	4 50	(10 51)	17 03	86.0	10.0	49.1	29.3	E.	1.5	—22.0	58.9
	12 45	23 05	17 10	10 20	(16 54)	83.0	20.0						
23	(1 15)	11 30	5 20	(10 15)	16 35	89.5	11.0	50.1	29.4	E.	1.2	—21.7	59.3
	13 45	23 45	17 40	10 00	(16 25)	77.0	19.0						
24	(2 14)		6 07		16 22		15.0	49.1	29.7	E.	1.0	—20.0	59.5
	14 44	12 30	18 07	(10 16)	(15 53)	88.0	18.0						
25	(3 12)	0 50	7 07	10 06	16 23	75.0	11.0	46.9	29.8	E.	2.2	—17.0	59.6
	15 41	13 15	19 20	(10 03)	(16 08)	83.5	17.0						
26	(4 08)	1 25	7 30	9 44	15 49	73.0	16.0	47.2	29.8	NE.	0.3	—13.0	59.5
	16 35	14 07	20 14	(9 59)	(16 06)	82.0	21.0						
27	(5 01)	2 20	8 30	9 45	15 55	69.0	14.0	44.0	29.8	E.	0.2	— 8.3	59.3
	17 28	14 40	21 07	(9 39)	(16 06)	74.0	20.0						
28	(5 53)	3 18	9 15	9 50	15 47	60.0	21.5	43.3	29.7	SE.	0.2	— 3.2	59.0
	18 18	15 45	22 07	(9 52)	(16 14)	69.0	22.0						
29	(6 43)	4 15	10 30	9 57	16 12	60.5	26.5	44.5	29.7	E.	0.2	+ 2.1	58.7
	19 07	16 45	23 10	(10 02)	(16 27)	68.0	22.5						
30	(7 32)	6 07		11 00		61.0		46.1	29.6	E.	0.7	+ 7.2	58.4
	19 57	40	12 15	(11 08)	17 08	68.0	28.0						
Dec. 1	(8 22)	6 40	0 55	10 43	(17 23)	72.5	28.0	53.5	29.2	E.	0.8	+11.8	58.0
	20 47	19 15	13 15	(10 53)	17 18	80.5	38.0						
2	(9 12)	8 15	2 10	11 28	(17 48)	82.0	28.0	54.3	29.4	NE.	0.2	+15.9	57.5
	21 38	20 15	14 07	(11 03)	17 20	74.5	32.0						
3	(10 04)	9 07	2 30	11 29	(17 18)	79.8	22.0	49.1	29.5	NE.	0.2	+19.0	57.0
	22 31	21 08	15 10	(11 04)	17 32	75.0	22.0						
4	(10 57)	9 50	3 30	11 19	(17 26)	79.0	13.0	46.1	29.6	NE.	0.2	+21.1	56.5
	23 24	22 10	16 07	(11 13)	17 36	72.5	18.0						
5	(11 50)	10 35	4 20	11 11	(17 23)	84.0	13.0	47.4	29.7	E.	2.0	+22.0	56.0
		22 40	16 40	(10 50)	17 16	75.0	19.0						
6	0 17	11 07	4 50	10 50	(17 00)	83.0	12.5	45.6	29.8	E.	0.2	+21.8	55.5
	(12 43)	23 25	17 15	(10 42)	16 58	74.0	13.5						
7	1 09	11 40	5 30	10 31	(16 47)	82.0	8.0	45.4	29.9	o	0.0	+20.6	55.1
	(13 33)		17 45		16 36		18.0						
8	1 58	0 07	6 15	(10 34)	(16 42)	74.0	11.0	44.5	30.0	o	0.0	+18.4	54.7
	(14 22)	12 15	18 25	10 17	16 27	79.0	13.0						
9	2 46	0 30	6 45	(10 08)	(16 23)	71.0	10.0	42.8	29.8	E.	0.1	+15.4	54.4
	(15 08)	13 07	19 20	10 21	16 3[illegible]	77.0	14.0						
10	3 30	0 50	7 25	(9 42)	(16 17)	67.0	15.0	42.4	29.9	E.	0.9	+11.8	54.2
	(15 51)	13 30	19 50	10 00	16 20	72.0	15.0						
11	4 13	2 07	8 07	(10 16)	(16 16)	66.0	20.0	43.4	29.7	E.	1.4	+ 7.8	54.1
	(16 34)	14 25	20 30	10 12	16 17	70.0	19.0						
12	4 55	2 35	8 35	(10 01)	(16 01)	63.0	27.0	45.7	29.5	E.	0.2	+ 3.5	54.3
	(17 15)	14 40	21 07	9 45	16 12	68.0	27.0						
13	5 36	3 07	9 07	(9 52)	(15 52)	62.0	35.0	47.1	29.4	E.	0.1	— 1.0	54.6
	(17 57)	15 20	21 40	9 44	16 04	67.0	27.0						
14	6 18	4 07	10 20	(10 10)	(16 23)	57.0	33.0	43.1	29.6	E.	1.3	— 5.5	55.1
	(18 40)	16 30	22 45	10 12	16 27	57.5	26.0						
15	7 02	5 07	11 30	(10 27)	(16 50)	53.0	27.0	40.9	29.7	E.	0.3	— 9.8	55.7
	(19 25)	17 30		10 28		59.5							
16	7 48	6 20	0 07	(10 55)	17 05	53.0	23.0	40.8	29.8	E.	0.1	—13.9	56.5
	(20 12)	19 07	12 45	11 19	(17 20)	58.0	29.0						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1881.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Dec. 17	8 37	7 20	1 07	(11 08)	17 19	59.0	21.0	41.3	29.7	0	0.0	—17.4	57.3
	(21 04)	19 20	13 07	10 43	(16 55)	57.5	28.0						
18	9 31	8 20	2 07	(11 16)	17 30	66.0	17.0	40.2	29.8	0	0.0	—20.1	58.2
	(21 59)	20 45	14 45	11 14	(17 45)	60.0	20.0						
19	10 28	9 07	2 50	(11 08)	17 19	70.0	10.0	39.5	29.8	0	0.0	—21.7	59.0
	(22 58)	21 15	15 23	10 47	(17 24)	64.0	16.0						
20	11 28	10 07	3 20	(11 09)	16 52	75.0	6.0	40.4	29.7	E.	0.2	—22.0	59.7
	(23 59)	22 30	16 15	11 02	(17 17)	69.0	13.0						
21		10 30	4 20	(10 31)	16 52	81.5	4.0	43.6	29.6	0	0.0	—20.8	60.2
	12 29	22 45	16 30	10 16	(16 31)	78.0	12.0						
22	(0 59)	11 15	5 07	(10 16)	16 38	87.5	8.0	46.4	29.5	0	0.0	—18.2	60.5
	13 29	23 30	17 30	10 01	(16 31)	77.0	13.0						
23	(1.58)		5 40		16 11		7.0	46.4	29.4	E.	4.1	—14.4	60.5
	14 27	12 07	18 05	(10 09)	(16 07)	89.0	11.2						
24	(2 54)	0 15	6 20	9 48	15 53	80.0	4.0	43.0	29.5	E.	5.1	— 9.7	60.2
	15 22	12 30	19 07	(9 36)	(16 13)	77.0	11.0						
25	(3 48)	1 15	7 25	9 53	16 03	76.3	4.0	41.3	29.7	E.	0.8	— 4.5	59.8
	16 14	13 07	19 20	(9 19)	(15 32)	79.0	9.0						
26	(4 39)	1 30	7 40	9 16	15 26	66.0	8.0	39.1	29.9	E.	0.4	+ 0.8	59.3
	17 05	14 07	20 20	(9 28)	(15 41)	73.0	10.0						
27	(5 30)	2 30	8 30	9 25	15 25	62.0	14.0	38.6	30.1	E.	0.2	+ 6.0	58.7
	17 55	14 40	21 07	(9 10)	(15 37)	68.0	13.0						
28	(6 19)	3 25	9 30	9 30	15 35	55.0	17.5	37.7	30.1	N.	0.1	+10.8	58.0
	18 44	16 07	22 05	(9 48)	(15 46)	60.0	17.5						
29	(7 09)	4 30	10 25	9 46	15 41	58.0	20.0	39.1	29.9	0	0	+14.9	57.7
	19 35	16 40	23 30	(9 31)	(16 21)	57.5	20.0						
30	(8 00)	5 55		10 20		60.5		40.7	30.0	0	0	+18.3	56.8
	20 26	18 40	12 20	(10 40)	16 45	57.0	27.0						
31	(8 52)	7 40	1 30	11 14	(17 30)	59.5	16.5	41.3	29.9	E.	0.1	+20.6	56.3
	21 18	20 07	14 07	(11 15)	17 41	62.0	26.0						
1882.													
Jan. 1	(9 44)	8 04	2 07	10 46	(17 15)	70.0	21.0	44.5	29.6	NW.	0.5	+21.9	55.8
	22 11	21 07	17 07	(11 23)	19 49	63.5	26.0						
2	(10 36)	10 05	3 15	11 54	(17 31)	71.0	16.5	41.1	29.9	0	0	+22.0	55.4
	23 02	22 07	16 15	(11 31)	18 04	61.0	16.0						
3	(11 27)	10 45	4 15	11 43	(17 39)	73.0	9.0	38.6	30.2	N.	0.1	+21.1	55.0
	23 52	23 07	16 40	(11 40)	17 38	61.0	11.7						
4		11 00	4 40	11 08	(17 13)	75.5	5.5	40.7	29.8	SE.	0.3	+19.2	54.6
	(12 16)	23 23	17 06	(11 07)	17 14	68.2	14.7						
5	0 40	11 35	5 24	10 55	(17 08)	78.2	10.0	42.5	29.7	E.	1.8	+16.4	54.3
	(13 03)	23 40	17 50	(10 37)	17 10	69.0	13.5						
6	1 26		5 50		(16 47)		8.8	41.5	29.8	E.	0.5	+13.0	54.1
	(13 48)	12 20	18 20	10 54	16 54	77.2	11.0						
7	2 10	0 25	6 25	(10 37)	(16 37)	69.0	7.0	40.9	29.9	0	0	+ 9.1	54.0
	(14 31)	12 35	18 50	10 25	16 40	75.5	12.0						
8	2 52	0 55	7 00	(10 24)	(16 29)	68.0	10.0	41.7	29.9	N.	0.1	+ 4.9	54.0
	(15 12)	12 25	18 45	9 33	15 53	75.5	15.0						
9	3 33	1 10	7 20	(9 58)	(16 08)	66.5	13.0	42.3	29.9	SE.	0.2	+ 0.5	54.2
	(15 53)	13 35	19 35	10 02	16 02	71.0	16.5						
10	4 14	1 35	7 45	(9 42)	(15 52)	71.5	16.0	41.9	30.0	0	0	— 3.9	54.5
	(16 35)	14 00	20 20	9 46	16 06	67.0	16.0						
11	4 56	2 00	8 10	(9 25)	(15 35)	60.5	21.0	40.3	30.0	0	0	— 8.3	54.9
	(17 18)	14 30	20 45	9 34	15 49	61.0	17.0						
12	5 40	2 25	9 15	(9 07)	(15 57)	62.0	26.0	41.4	29.7	SE.	1.1	—12.3	55.6
	(18 03)	15 20	21 30	9 40	15 50	60.5	20.0						
13	6 26	3 20	9 30	(9 17)	(15 27)	54.5	32.0	44.5	29.5	E.	1.3	—16.0	56.3
	(18 51)	16 15	22 30	9 49	16 04	59.0	31.0						
14	7 16	4 40	11 25	(9 49)	(16 34)	65.5	43.0	50.7	29.3	E.	0.3	—19.0	57.2
	(19 43)	17 30	23 50	10 14	16 34	63.5	32.0						
15	8 10	7 00		(11 17)		66.0		48.2	29.6	0	0	—21.1	58.2
	(20 39)	19 10	13 15	11 00	(17 32)	62.4	38.0						
16	9 08	8 15	1 25	(11 36)	17 15	62.0	21.5	48.5	29.4	NE.	17.1	—22.0	59.1
	(21 38)	19 50	14 00	10 42	(17 21)	73.7	37.0						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc* —Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Jan. 17	10 08	9 13	2 30	(11 35)	17 22	76.0	26.3	50.1	29.5	NE.	4.5	−21.5	60.0
	(22 38)	21 30	15 40	11 22	(18 02)	72.0	27.0						
18	11 09	10 00	3 25	(11 22)	17 17	82.5	16.5	50.1	29.7	E.	0.3	−19.6	60.7
	(23 39)	22 15	16 00	11 06	(17 22)	77.0	23.0						
19	--------	10 55	4 00	(11 16)	16 51	89.0	15.0	51.4	29.8	E.	0.4	−16.3	61.1
	12 09	23 25	17 00	11 16	(17 21)	80.5	20.5						
20	(0 38)	11 36	5 10	(10 58)	17 01	95.2	17.0	52.5	29.9	E.	0.2	−11.8	61.2
	13 07	23 55	17 35	10 48	(16 57)	88.1	15.1						
21	(1 35)	--------	6 00	--------	16 53	--------	9.3	48.6	29.9	E.	0.2	− 6.7	61.0
	14 03	12 20	18 22	(10 45)	(16 47)	93.3	7.4						
22	(2 30)	0 40	6 40	10 37	16 37	81.7	− 1.3	43.9	29.9	0	0	− 1.2	60.5
	14 57	12 45	18 30	(10 15)	(16 00)	89.2	2.7						
23	(3 23)	1 15	7 20	10 18	16 23	83.7	1.7	45.3	29.6	SE.	5.3	+ 4.3	59.8
	15 49	13 30	19 25	(10 07)	(16 02)	91.7	9.7						
24	(4 15)	1 50	7 45	10 01	15 56	74.7	6.7	43.7	29.3	SE.	0.4	+ 9.4	59.0
	16 40	14 00	20 15	(9 45)	(16 00)	80.7	10.7						
25	(5 06)	2 40	8 45	10 00	16 05	75.2	15.2	41.9	29.6	N.	0.1	+13.8	58.2
	17 32	14 40	21 00	(9 34)	(15 54)	71.7	9.7						
26	(5 58)	3 15	9 25	9 43	15 53	60.2	15.7	37.2	29.9	0	0	+17.4	57.3
	18 23	15 40	21 55	(9 42)	(15 57)	58.7	14.2						
27	(6 49)	4 25	10 30	10 02	16 07	57.2	24.7	38.3	29.8	0	0	+20.0	56.6
	19 15	16 35	22 50	(9 46)	(16 01)	52.7	19.7						
28	(7 41)	5 40	11 45	10 25	16 30	55.2	31.7	41.1	29.5	E.	0.6	+21.5	55.9
	20 07	18 00	--------	(10 19)	--------	55.4	--------						
29	(8 32)	7 20	0 45	11 13	(17 04)	58.2	[illegible]	41.4	29.6	SE.	0.3	+22.0	55.4
	20 58	19 50	13 40	(11 18)	17 33	51.7	26.7						
30	(9 24)	8 40	2 25	11 42	(17 53)	71.7	27.2	4[illegible].2	29.3	NE.	1.3	+21.3	54.9
	21 49	21 00	14 45	(11 36)	17 47	63.7	28.6						
31	(10 13)	9 30	3 25	11 41	(18 01)	69.2	24.2	43.7	29.5	NE.	0.1	+19.7	54.5
	22 37	21 50	15 40	(11 37)	17 51	61.7	20.2						
Feb. 1	(11 00)	10 18	4 12	11 41	(17 59)	73.7	16.2	42.8	29.3	NE.	1.0	+17.2	54.3
	23 23	22 25	16 15	(11 25)	17 38	65.7	18.7						
2	(11 45)	10 43	4 30	11 20	(17 30)	74.7	10.7	40.7	29.4	SE.	0.3	+14.0	54.1
	--------	23 17	16 40	(11 32)	17 17	66.7	9.7						
3	0 07	11 45	5 07	11 38	(17 22)	77.7	10.7	41.5	29.6	E.	0.4	+10.3	54.0
	(12 28)	23 35	18 07	(11 07)	18 00	68.7	12.7						
4	0 50	--------	6 10	--------	(17 42)	--------	4.7	38.3	29.9	N.	0.1	+ 6.2	53.9
	(13 11)	12 07	18 07	11 17	17 17	73.7	7.0						
5	1 32	0 10	6 20	(10 59)	(17 09)	65.2	3.7	35.0	30.4	0	0	+ 1.9	54.0
	(13 52)	12 10	18 25	10 38	16 53	69.7	1.9						
6	2 13	0 50	6 40	(10 58)	(16 48)	60.2	− 4.3	31.7	30.5	SE.	0.4	− 2.5	54.2
	(14 33)	12 45	19 07	10 32	16 54	66.2	0.2						
7	2 54	1 07	7 10	(10 34)	(16 37)	65.7	5.8	37.6	30.0	E.	0.1	− 6.9	54.5
	(15 16)	13 15	19 07	10 21	16 13	71.7	7.7						
8	3 37	1 30	7 35	(10 14)	(16 19)	70.2	16.0	42.9	29.6	E.	0.2	−11.0	54.9
	(15 59)	13 40	20 07	10 03	16 30	73.2	13.2						
9	4 22	2 12	8 07	(10 13)	(16 08)	70.9	22.9	45.5	29.6	NE.	0.1	−14.7	55.5
	(16 45)	14 10	20 13	9 48	15 51	73.5	18.2						
10	5 09	2 14	8 25	(9 29)	(15 40)	65.9	26.3	44.3	29.8	NE.	0.1	−17.9	56.1
	(17 34)	14 32	20 52	9 23	15 43	65.2	21.9						
11	6 00	2 57	9 12	(9 23)	(15 38)	59.9	29.0	42.5	29.9	0	0	−20.2	57.0
	(18 26)	15 12	21 20	9 12	15 20	58.4	22.7						
12	6 53	3 35	9 40	(9 09)	(15 14)	57.0	34.0	42.1	29.9	0	0	−21.6	57.9
	(19 21)	16 13	23 07	9 20	16 14	51.9	27.0						
13	7 50	5 20	--------	(9 59)	--------	55.8	--------	42.2	29.9	NE.	0.5	−21.7	58.8
	(20 19)	18 10	12 10	10 20	(16 49)	54.4	32.9						
14	8 49	8 07	0 26	(11 48)	16 36	59.4	24.6	42.8	30.0	NE.	0.4	−20.5	59.8
	(21 19)	20 17	14 10	11 28	(17 51)	58.8	29.4						
15	9 49	9 08	2 24	(11 40)	17 35	70.7	21.4	47.4	29.6	E.	0.4	−17.9	60.6
	(22 18)	21 21	15 12	11 32	(17 53)	73.2	28.4						
16	10 47	9 55	3 40	(11 37)	17 51	83.2	21.0	52.1	29.4	NE	0.6	−14.0	61.2
	(23 16)	22 17	16 07	11 30	(17 49)	84.0	23.4						
17	11 45	10 24	4 26	(11 08)	17 39	93.9	18.4	54.6	29.4	SE.	0.5	− 9.2	61.5
	--------	22 43	16 34	10 58	(17 18)	90.8	18.4						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Feb. 18	(0 13)	11 12	4 56	(10 59)	17 11	97.3	13.8	51.6	29.4	NE.	0.3	− 3.8	61.4
	12 40	23 26	17 20	10 46	(17 07)	89.2	8.3						
19	(1 08)	11 50	5 49	(10 42)	17 09	93.8	3.4	46.7	29.8	NE.	0.5	+ 1.8	61.0
	13 35		18 04		(16 56)		0.3						
20	(2 02)	0 17	6 30	10 42	16 55	87.6	1.3	47.1	29.7	NE.	0.6	+ 7.2	60.4
	14 29	12 32	18 31	(10 30)	(16 29)	96.3	2.6						
21	(2 55)	0 40	6 52	10 11	16 23	91.8	1.9	46.1	29.9	E.	1.1	+12.1	59.5
	15 22	12 58	19 14	(10 03)	(16 19)	93.3	0.7						
22	(3 49)	1 25	7 34	10 03	16 12	80.8	0.8	39.3	30.3	0	0	+16.1	58.5
	16 16	13 37	19 40	(9 48)	(15 51)	77.3	− 0.5						
23	(4 42)	2 00	8 13	9 44	15 57	69.4	7.3	38.6	30.3	E.	0.6	+19.1	57.6
	17 09	14 25	20 31	(9 43)	(15 49)	69.8	9.6						
24	(5 35)	2 42	8 55	9 33	15 46	67.6	20.8	44.3	29.9	E.	0.5	+21.0	56.7
	18 02	14 59	21 07	(9 24)	(15 32)	67.3	24.8						
25	(6 28)	3 21	9 26	9 19	15 24	67.4	35.3	47.5	29.5	E.	0.8	+21.7	55.9
	18 55	15 50	21 07	(9 22)	(14 39)	61.3	26.3						
26	(7 20)	4 30	10 14	9 35	15 19	64.3	41.8	49.9	29.3	E.	0.7	+21.3	55.2
	19 45	17 32	23 39	(10 12)	(16 19)	60.8	36.8						
27	(8 10)	6 40		10 55		63.8		50.2	29.4	E.	0.2	+20.0	54.7
	20 34	19 40	13 25	(11 30)	17 40	61.4	39.9						
28	(8 57)	8 35	2 10	12 01	(18 00)	70.3	34.1	49.4	29.5	S.	0.3	+17.8	54.3
	21 21	21 07	14 50	(12 10)	[illegible]	62.8	32.6						
Mar. 1	(9 43)	9 10	2 55	11 49	(17 58)	71.4	28.3	49.5	29.7	S.	1.0	+14.8	54.1
	22 05	21 36	15 35	(11 53)	18 14	70.3	29.3						
2	(10 27)	10 07	3 44	12 02	(18 01)	84.3	27.1	55.4	29.2	NE.	0.2	+11.2	54.0
	22 49	22 27	16 24	(12 00)	18 19	83.1	31.8						
3	(11 10)	10 33	4 38	11 44	(18 11)	84.6	28.0	52.0	29.4	E.	0.3	+ 7.3	53.9
	23 31	22 40	16 45	(11 30)	17 56	75.6	20.5						
4	(11 51)	10 53	4 46	11 22	(17 36)	81.8	15.8	47.2	29.8	E.	0.4	+ 3.0	54.0
		22 56	17 07	(11 05)	17 36	78.3	15.3						
5	0 12	11 19	5 12	11 07	(17 21)	79.2	10.8	44.3	29.9	SW.	1.9	− 1.4	54.2
	(12 33)	23 35	17 19	(11 02)	17 07	78.8	8.3						
6	0 54		5 43		(17 10)		9.3	43.5	29.8	E.	5.9	− 5.7	54.4
	(13 15)	12 00	18 07	11 06	17 13	80.5	6.3						
7	1 36	0 17	6 23	(11 02)	(17 08)	77.4	5.8	41.7	29.9	NE.	0.7	− 9.9	54.7
	(13 58)	12 30	18 30	10 54	16 54	76.9	3.3						
8	2 20	0 37	6 46	(10 39)	(16 48)	81.3	7.6	43.7	29.7	NE.	0.6	−13.7	55.1
	(14 43)	12 50	18 18	10 30	15 58	79.8	8.3						
9	3 07	0 50	7 17	(10 07)	(16 34)	78.6	16.0	45.8	29.6	NE.	0.3	−16.9	55.6
	(15 31)	13 19	19 20	10 12	16 13	76.9	13.0						
10	3 55	1 28	7 34	(9 57)	(16 03)	77.8	20.6	47.5	29.5	NE.	0.4	−19.5	56.2
	(16 21)	13 41	19 45	9 46	15 50	74.8	19.3						
11	4 47	1 53	8 07	(9 32)	(15 46)	73.9	28.1	49.8	29.4	0	0	−21.1	56.9
	(17 14)	14 16	20 25	9 29	15 38	74.2	24.6						
12	5 41	2 34	8 50	(9 20)	(15 36)	73.2	34.5	50.1	29.5	NE.	1.0	−21.5	57.7
	(18 09)	15 07	21 10	9 26	15 29	65.9	30.8						
13	6 37	3 17	10 20	(9 08)	(16 11)	64.7	38.3	48.4	29.7	E.	0.2	−20.8	58.5
	(19 06)	15 45	22 25	9 08	15 48	59.3	32.3						
14	7 34	5 40	11 33	(10 34)	(16 27)	61.9	36.5	47.3	29.8	SE.	0.1	−18.8	59.3
	(20 03)	18 00		10 26		58.3							
15	8 31	7 24	0 30	(11 21)	16 56	64.6	31.9	47.3	29.9	E.	0.1	−15.6	60.1
	(20 59)	19 40	13 35	11 09	(17 32)	63.3	32.8						
16	9 27	8 23	1 45	(11 24)	17 14	70.8	24.8	44.4	30.2	E.	0.1	−11.3	60.7
	(21 55)	21 10	14 40	11 43	(17 41)	66.3	19.3						
17	10 23	9 31	3 19	(11 36)	17 52	71.4	13.8	39.3	30.5	0	0	− 6.3	61.1
	(22 50)	21 43	15 40	11 20	(17 45)	68.6	6.8						
18	11 17	10 00	3 50	(11 10)	17 27	75.3	2.1	37.0	30.5	E.	0.3	− 0.8	61.2
	(23 45)	22 34	16 15	11 17	(17 25)	74.8	− 1.2						
19		10 52	4 40	(11 07)	17 23	76.9	− 2.9	35.1	30.4	E.	0.2	+ 4.7	60.9
	12 12	23 19	17 08	11 07	(17 23)	78.0	−10.5						
20	(0 39)	11 21	5 25	(10 42)	17 13	81.8	− 7.0	37.2	30.2	NE.	0.2	+ 9.9	60.4
	13 06	23 50	17 35	10 44	(16 56)	84.4	− 8.7						
21	(1 34)	11 58	5 55	(10 24)	16 49	84.3	− 5.0	38.9	29.8	SE.	3.3	+14.3	59.7
	14 01		18 20		(16 46)		− 7.7						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Mar. 22	(2 29)	0 25	6 29	10 24	16 28	82.1	− 0.6	40.9	29.3	NE.	0.5	+17.8	58.8
	14 57	12 42	18 55	(10 13)	(16 26)	83.2	− 1.7						
23	(3 24)	1 15	7 21	10 18	16 24	85.8	7.4	44.6	29.4	E.	0.4	+20.2	57.8
	15 52	13 32	19 40	(10 08)	(16 16)	82.1	8.3						
24	(4 19)	1 46	7 50	9 54	15 58	78.4	16.7	45.1	29.6	E.	0.2	+21.3	56.9
	16 46	14 05	20 16	(9 46)	(15 57)	73.3	16.3						
25	(5 12)	2 19	8 32	9 33	15 46	70.3	21.4	44.7	29.8	E.	0.3	+21.3	56.0
	17 39	14 43	20 55	(9 31)	(15 43)	69.5	20.3						
26	(6 04)	3 15	9 25	9 36	15 46	63.4	28.8	44.8	29.7	E.	0.4	+20.2	55.3
	18 29	15 36	21 45	(9 32)	(15 41)	59.5	31.3						
27	(6 53)	4 15	10 28	9 46	15 59	58.5	35.0	45.3	29.7	E.	0.3	+18.2	54.8
	19 17	16 35	22 50	(9 42)	(15 57)	53.0	34.8						
28	(7 40)	6 15		10 58		59.6		46.3	29.6	E.	0.2	+15.4	54.4
	20 03	18 40	12 27	(11 00)	17 10	55.8	34.3						
29	(8 25)	7 50	1 07	11 47	(17 27)	65.8	35.3	50.0	29.2	E.	0.2	+12.1	54.1
	20 46	20 10	14 10	(11 45)	18 07	66.3	35.2						
30	(9 08)	8 39	2 30	11 53	(18 05)	70.1	37.4	48.9	29.5	SE.	2.6	+ 8.2	53.9
	21 29	20 50	14 45	(11 42)	17 59	64.8	26.8						
31	(9 50)	9 21	3 10	11 52	(18 02)	67.5	24.6	42.5	29.9	E.	1.7	+ 4.1	54.1
	22 10	21 40	15 30	(11 50)	18 01	66.3	14.3						
Apr. 1	(10 31)	9 58	3 45	11 48	(17 55)	69.0	14.3	42.1	29.9	NE.	0.7	− 0.2	54.2
	22 52	22 07	16 10	(11 36)	18 00	71.3	15.3						
2	(11 13)	10 30	4 20	11 38	(17 49)	73.3	14.1	42.2	29.9	E.	0.3	− 4.6	54.5
	23 34	22 55	16 42	(11 42)	17 50	72.8	10.0						
3	(11 56)	11 00	5 00	11 26	(17 47)	76.3	8.3	41.8	30.0	E.	0.8	− 8.8	54.8
		23 22	17 12	(11 26)	17 38	79.1	3.7						
4	0 18	11 20	5 25	11 02	(17 29)	80.3	10.5	45.8	29.8	E.	1.3	−12.7	55.2
	(12 41)	23 45	17 32	(11 04)	17 14	85.9	9.3						
5	1 04	11 45	5 45	10 41	(17 04)	80.3	11.2	46.6	29.8	E.	2.0	−16.1	55.6
	(13 28)		17 55		16 51		9.3						
6	1 53	0 07	6 15	(10 39)	(16 47)	83.9	13.4	46.3	29.8	E.	1.1	−18.8	56.1
	(14 18)	12 07	18 32	10 14	16 39	78.8	10.9						
7	2 44	0 45	6 50	(10 27)	(16 32)	80.4	15.6	44.4	30.0	E.	1.4	−20.6	56.6
	(15 10)	12 55	19 07	10 11	16 23	72.5	9.7						
8	3 37	1 12	7 15	(10 02)	(16 05)	74.8	16.3	40.5	30.3	E.	4.0	−21.3	57.2
	(16 04)	13 04	19 15	9 27	15 38	65.3	8.7						
9	4 32	1 30	7 40	(9 26)	(15 36)	64.3	11.4	34.9	30.9	E.	5.3	−20.9	57.7
	(17 00)	13 55	20 00	9 23	15 28	55.0	9.1						
10	5 28	2 15	8 25	(9 15)	(15 25)	58.5	17.5	37.1	30.6	E.	2.3	−19.2	58.3
	(17 56)	14 36	20 40	9 08	15 12	55.9	18.3						
11	6 23	3 30	9 30	(9 34)	(15 34)	60.8	27.2	40.5	30.5	SE.	2.8	−16.4	58.9
	(18 50)	15 40	22 13	9 17	15 50	55.8	23.1						
12	7 17	4 45	11 15	(9 55)	(16 25)	54.3	24.3	37.6	30.5	E.	1.0	−12.6	59.5
	(19 44)	17 36		10 19		49.4							
13	8 11	6 20	0 07	(10 36)	16 50	56.2	21.3	36.2	30.5	SE.	0.9	− 8.0	60.0
	(20 38)	19 20	12 30	11 09	(16 46)	54.3	15.3						
14	9 04	8 07	1 25	(11 29)	17 14	63.2	15.6	39.1	30.1	NE.	0.9	− 2.8	60.3
	(21 31)	20 30	14 35	11 26	(17 57)	65.2	15.6						
15	9 57	8 50	2 35	(11 19)	17 31	72.1	16.0	43.0	29.8	E.	1.2	+ 2.5	60.4
	(22 24)	21 22	15 00	11 25	(17 29)	75.8	12.3						
16	10 50	9 36	3 20	(11 12)	17 23	78.3	12.1	45.0	29.7	NE.	2.2	+ 7.7	60.3
	(23 17)	21 55	15 43	11 05	(17 19)	84.3	8.3						
17	11 45	10 16	4 10	(10 59)	17 20	82.9	9.3	45.7	29.7	E.	0.9	+12.4	59.9
		22 35	16 16	10 50	(16 59)	89.6	4.5						
18	(0 13)	10 55	4 40	(10 42)	16 55	83.2	4.3	43.8	30.0	E.	0.5	+16.4	59.4
	12 40	23 26	17 15	10 46	(17 02)	87.3	− 0.2						
19	(1 08)	11 38	5 28	(10 30)	16 48	80.1	2.4	41.0	30.2	E.	1.7	+19.2	58.6
	13 37		17 30		(16 22)		− 2.7						
20	(2 05)	0 07	6 16	10 30	16 39	81.3	− 0.4	37.5	30.4	E.	1.1	+20.9	57.8
	14 33	12 25	18 30	(10 20)	(16 25)	73.6	− 3.2						
21	(3 01)	0 42	6 45	10 09	16 12	74.5	1.7	38.2	30.2	SE.	1.6	+21.3	56.9
	15 28	12 53	19 10	(9 52)	(16 09)	69.3	8.3						
22	(3 54)	1 15	7 30	9 47	16 02	76.7	17.4	44.8	30.0	S.	15.3	+20.5	56.1
	16 20	13 31	19 38	(9 37)	(15 44)	72.6	18.3						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
April 23	(4 45)	1 51	8 00	9 31	15 40	71.6	18.4	40.9	30.4	SE.	1.1	+18.8	55.4
	17 10	14 05	20 17	(9 20)	(15 32)	57.3	15.3						
24	(5 34)	2 50	8 57	9 40	15 47	64.0	24.8	42.5	30.1	N.	0.3	+16.2	54.9
	17 57	15 10	21 20	(9 36)	(15 46)	59.0	27.9						
25	(6 20)	3 30	9 37	9 33	15 40	61.2	27.3	41.7	30.2	E.	6.3	+13.0	54.5
	18 42	15 50	22 07	(9 30)	(15 47)	51.3	30.2						
26	(7 04)	4 20		9 38		55.8		38.1	30.3	E.	0.7	+ 9.3	54.2
	19 25	18 10	12 00	(11 06)	17 18	50.4	17.3						
27	(7 46)	6 35	0 25	11 10	(17 21)	54.3	27.8	38.8	30.3	E.	0.2	+ 5.3	54.2
	20 07	19 25	13 20	(11 39)	17 55	52.4	22.8						
28	(8 28)	8 08	1 50	12 01	(18 04)	57.6	25.3	40.7	30.2	E.	0.3	+ 1.0	54.2
	20 48	20 25	14 09	(11 57)	18 02	60.2	22.3						
29	(9 09)	8 50	2 40	12 02	(18 12)	62.7	24.8	40.2	30.2	N.	0.8	− 3.3	54.5
	21 30	*20 50	15 07	(11 41)	18 19	61.1	16.3						
30	(9 52)	9 22	3 12	11 52	(18 03)	58.8	14.5	36.4	30.2	NW.	0.9	− 7.6	54.8
	22 14	21 30	15 30	(11 38)	18 00	63.9	9.2						
May 1	(10 36)	9 50	3 42	11 36	(17 50)	62.7	11.6	36.0	30.2	N.	0.7	−11.6	55.3
	22 59	22 07	15 55	(11 31)	17 41	68.4	4.8						
2	(11 23)	10 27	4 18	11 28	(17 42)	65.3	4.6	36.7	30.1	NW.	0.8	−15.2	55.8
	23 48	22 40	16 33	(11 17)	17 34	73.5	3.6						
3		10 58	4 50	11 10	(17 27)	66.3	7.9	36.4	30.2	SE.	5.6	−18.1	56.3
	(12 14)	23 18	17 07	(11 04)	17 19	72.0	0.5						
4	0 39	11 40	5 30	11 01	(17 16)	65.5	2.9	34.6	30.3	NE.	2.3	−20.2	56.8
	(13 05)	23 52	17 45	(10 47)	17 06	72.4	− 2.5						
5	1 32		6 09		(17 04)		2.7	35.4	30.2	NW.	0.6	−21.2	57.3
	(13 59)	12 00	18 02	10 28	16 30	66.2	− 1.1						
6	2 27	0 10	6 18	(10 11)	(16 19)	73.8	6.6	37.2	30.1	E.	0.9	−21.0	57.8
	(14 55)	12 33	18 39	10 06	16 12	66.3	3.1						
7	3 23	0 45	6 53	(9 50)	(15 58)	73.6	11.8	39.2	30.0	SE.	1.7	−19.6	58.2
	(15 51)	13 04	19 14	9 41	15 51	64.6	9.3						
8	4 19	1 23	7 30	(9 32)	(15 39)	71.9	13.9	38.5	30.2	E.	4.1	−17.1	58.6
	(16 46)	14 00	20 02	9 41	15 43	60.9	10.1						
9	5 13	2 18	8 35	(9 32)	(15 49)	63.3	15.3	36.9	30.3	NE.	1.2	−13.5	59.0
	(17 40)	14 55	21 02	9 42	15 49	56.1	14.5						
10	6 06	3 15	9 33	(9 35)	(15 53)	61.3	18.2	36.2	30.3	SW.	0.2	− 9.1	59.2
	(18 32)	15 49	22 10	9 43	16 04	51.4	16.8						
11	6 58	4 29	10 47	(9 57)	(16 15)	55.8	15.3	34.2	30.3	NW.	0.7	− 4.2	59.5
	(19 24)	17 25	23 55	10 27	16 57	49.8	15.8						
12	7 49	6 18		(10 54)		56.1		34.8	30.2	S.	0.5	+ 0.9	59.6
	(20 15)	19 25	13 07	11 36	(17 43)	56.1	11.3						
13	8 41	7 40	1 35	(11 25)	17 46	62.8	15.7	38.1	30.0	SE.	6.7	+ 6.1	59.6
	(21 07)	20 17	13 50	11 36	(17 35)	64.4	13.4						
14	9 33	8 33	2 27	(11 26)	17 46	64.5	14.3	40.7	29.9	NE.	0.4	+10.8	59.4
	(22 00)	21 13	14 40	11 40	(17 33)	74.8	10.8						
15	10 27	9 30	3 22	(11 30)	17 49	74.8	15.2	44.5	29.7	NE.	5.3	+15.0	59.1
	(22 54)	22 00	15 41	11 33	(17 41)	80.9	9.3						
16	11 22	*9 50	4 17	(10 56)	17 50	80.8	13.2	45.4	29.8	SW.	1.5	+18.2	58.6
	(23 50)	22 42	16 22	11 20	(17 28)	82.1	6.3						
17		10 47	4 55	(10 57)	17 33	82.1	10.3	45.4	29.8	S.	0.5	+20.3	58.0
	12 18	23 17	17 05	10 59	(17 15)	85.1	6.3						
18	(0 46)	11 38	5 28	(10 52)	17 10	77.6	8.9	44.9	29.8	NW.	1.0	+21.2	57.4
	13 14	23 55	17 44	10 41	(16 58)	84.8	7.8						
19	(1 41)		6 10		16 56		11.2	44.9	29.9	NE.	1.6	+20.9	56.7
	14 08	12 05	18 20	(10 24)	(16 39)	76.3	8.3						
20	(2 34)	0 30	6 38	10 22	16 30	82.9	12.3	45.0	30.0	NE.	1.5	+19.5	56.0
	15 00	12 40	18 50	(10 06)	(16 16)	76.3	11.3						
21	(3 25)	1 00	7 15	10 00	16 15	77.1	16.8	44.6	30.1	SE.	1.1	+17.2	55.3
	15 49	13 25	19 32	(10 00)	(16 07)	70.7	15.3						
22	(4 13)	1 40	7 49	9 51	16 00	74.8	18.3	43.5	30.2	SE.	1.4	+14.1	54.8
	16 36	13 50	19 55	(9 37)	(15 42)	67.4	17.3						
23	(4 58)	2 04	8 26	9 28	15 50	64.8	19.1	40.3	30.4	E.	0.8	+10.5	54.5
	17 20	14 36	20 43	(9 38)	(15 45)	63.3	16.8						
24	(5 41)	3 00	9 10	9 40	15 50	55.4	17.3	35.6	30.4	N.	1.5	+ 6.6	54.3
	18 02	15 30	21 35	(9 49)	(15 54)	47.4	23.0						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
May 25	(6 23)	3 46	10 20	9 44	16 18	53.1	21.0	36.8	30.3	N.	0.8	+ 2.4	54.2
	18 44	17 07	23 13	(10 44)	(16 50)	48.3	25.3						
26	(7 05)	5 37	11 49	10 53	17 05	53.9	21.8	38.7	30.2	E.	0.4	− 1.9	54.4
	19 25	18 18		(11 13)		52.5							
27	(7 47)	6 52	0 36	11 27	(17 31)	55.2	29.0	39.8	30.2	S.	4.9	− 6.2	54.7
	20 08	19 18	13 04	(11 31)	17 39	54.4	22.2						
28	(8 30)	7 49	1 32	11 41	(17 45)	55.6	27.3	41.2	30.2	SE.	6.4	−10.3	55.1
	20 52	20 13	14 00	(11 43)	17 52	62.3	21.8						
29	(9 15)	8 37	2 27	11 45	(17 57)	62.4	27.0	44.4	30.0	NE.	2.1	−14.0	55.7
	21 39	21 09	14 49	(11 54)	17 57	70.3	21.6						
30	(10 04)	9 36	3 24	11 57	(18 09)	65.8	24.3	43.4	30.1	E.	8.3	−17.2	56.3
	22 29	21 55	15 48	(11 51)	18 09	69.3	16.1						
31	(10 56)	10 45	4 07	12 16	(18 03)	64.4	16.7	40.2	30.4	S.	0.8	−19.6	57.0
	23 23	22 22	16 15	(11 26)	17 46	71.7	8.3						
June 1	(11 50)	10 26	4 30	11 03	(17 34)	67.3	14.2	40.7	30.3	SE.	0.3	−21.0	57.6
		22 55	16 29	(11 05)	17 06	76.2	6.7						
2	0 18	11 18	5 00	11 00	(17 10)	69.4	13.0	41.3	30.1	E.	1.2	−21.2	58.2
	(12 46)	23 30	17 24	(10 44)	17 06	80.3	4.6						
3	1 15	11 47	5 35	10 32	(16 49)	70.2	10.3	42.2	30.1	S.	0.8	−20.1	58.7
	(13 44)		17 50		16 35		6.9						
4	2 13	0 14	6 23	(10 30)	(16 39)	81.9	12.9	44.7	30.0	SE.	1.9	−17.8	59.0
	(14 41)	12 35	18 25	10 22	16 12	75.2	8.3						
5	3 09	0 40	6 47	(9 59)	(16 06)	85.8	15.2	46.4	30.0	E.	4.8	−14.4	59.3
	(15 36)	13 10	19 18	10 01	16 09	74.3	12.3						
6	4 03	1 24	7 42	(9 48)	(16 06)	83.8	16.9	46.1	30.0	W.	1.3	−10.2	59.4
	(16 29)	13 53	20 05	9 50	16 02	69.8	15.8						
7	4 55	2 15	8 27	(9 46)	(15 58)	79.1	20.4	46.9	30.0	SW.	0.3	− 5.4	59.4
	(17 21)	14 35	20 47	9 40	15 52	67.8	23.2						
8	5 46	2 56	9 10	(9 35)	(15 49)	76.8	23.8	47.2	30.0	SW.	1.4	− 0.3	59.3
	(18 11)	15 37	21 50	9 51	16 04	64.4	26.0						
9	6 37	4 07	10 25	(9 56)	(16 14)	72.5	24.2	47.7	30.0	W.	1.1	+ 4.8	59.1
	(19 02)	17 12	23 20	10 35	16 43	66.3	29.8						
10	7 28	5 33	11 51	(10 31)	(16 49)	71.1	24.1	46.5	30.1	S.	0.6	+ 9.6	58.9
	(19 54)	18 27		10 59		68.0							
11	8 20	7 07	0 50	(11 13)	17 22	58.1	21.1	39.8	30.0	SW.	2.1	+13.9	58.6
	(20 46)	19 48	13 12	11 28	(17 18)	62.6	14.2						
12	9 13	8 09	1 58	(11 23)	17 38	62.5	19.6	40.2	29.9	E.	1.1	+17.3	58.2
	(21 40)	20 35	14 07	11 22	(17 21)	66.1	14.0						
13	10 08	8 40	2 40	(11 00)	17 27	61.6	19.3	40.5	29.9	W.	1.5	+19.8	57.7
	(22 35)	21 42	15 14	11 34	(17 34)	72.6	10.6						
14	11 03	9 54	3 49	(11 19)	17 41	65.7	18.1	42.7	29.8	SW.	1.4	+21.1	57.2
	(23 30)	21 50	16 00	10 47	(17 25)	76.2	11.9						
15	11 57	10 26	4 21	(10 56)	17 18	73.1	17.1	46.7	29.5	SE.	7.5	+21.2	56.7
		23 10	16 35	11 13	(17 05)	84.0	14.1						
16	(0 24)	11 28	5 07	(11 04)	17 10	73.4	20.9	47.4	29.5	E.	4.1	+20.2	56.1
	12 50	23 50	17 40	11 00	(17 16)	83.7	13.0						
17	(1 16)		6 05		17 15		16.8	47.0	29.5	E.	10.8	+18.1	55.6
	13 41	12 15	18 10	(10 59)	(16 54)	73.9	13.1						
18	(2 05)	0 10	6 23	10 29	16 42	83.3	20.3	47.3	29.6	SE.	1.5	+15.3	55.1
	14 29	12 26	18 25	(10 21)	(16 20)	72.7	14.3						
19	(2 51)	0 33	6 42	10 04	16 13	81.2	18.3	45.5	29.7	S.	5.5	+11.9	54.7
	15 14	12 55	19 15	(10 04)	(16 24)	68.4	16.2						
20	(3 36)	1 20	7 31	10 06	16 17	75.5	19.2	43.8	29.9	S.	15.2	+ 8.0	54.4
	15 57	13 49	19 55	(10 13)	(16 19)	65.5	17.2						
21	(4 18)	2 09	8 20	10 12	16 23	70.5	18.1	42.1	30.0	S.	7.1	+ 3.9	54.2
	16 39	14 30	20 35	(10 12)	(16 17)	59.8	20.1						
22	(5 00)	2 42	8 45	10 03	16 06	70.5	21.3	43.7	29.8	S.	2.0	− 0.4	54.2
	17 21	15 00	21 07	(10 00)	(16 07)	59.3	28.3						
23	(5 42)	3 16	9 29	9 55	16 08	65.3	25.8	42.9	29.8	SE.	2.5	− 4.7	54.4
	18 02	15 44	21 55	(10 02)	(16 13)	57.0	27.0						
24	(6 23)	4 07	10 18	10 05	16 16	55.0	22.0	39.7	30.1	S.	2.3	− 8.8	54.8
	18 45	16 35	22 44	(10 12)	(16 21)	53.0	30.0						
25	(7 08)	4 57	11 18	10 12	16 33	53.7	21.8	39.7	30.1	SW.	1.9	−12.6	55.3
	19 31	17 30	23 38	(10 22)	(16 30)	54.0	29.8						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
June 26	(7 55)	5 52	-----	10 21	-----	52.2	-----	40.3	30.1	S.	1.8	—16.0	55.9
	20 19	18 30	12 14	(10 35)	16 43	56.7	21.8						
27	(8 44)	7 20	0 44	11 01	(16 49)	55.5	30.8	41.3	30.0	S.	3.2	—18.7	56.7
	21 10	20 10	13 41	(11 26)	17 22	61.0	21.3						
28	(9 37)	8 45	2 34	11 35	(17 50)	57.0	25.1	41.5	30.1	SE.	12.8	—20.5	57.5
	22 05	21 10	14 55	(11 33)	17 45	66.5	20.0						
29	(10 33)	9 34	3 30	11 29	(17 53)	60.9	22.7	41.3	30.0	S.	13.0	—21.3	58.3
	23 02	22 05	15 43	(11 32)	17 38	72.1	12.0						
30	(11 31)	10 30	4 12	11 28	(17 39)	65.3	17.8	41.7	30.0	SE.	12.5	—20.7	59.0
	-----	22 38	16 25	(11 07)	17 23	77.1	8.8						
July 1	0 00	10 50	4 50	10 50	(17 19)	68.6	14.8	41.7	30.0	S.	2.4	—18.8	59.5
	(12 29)	23 16	*17 10	(10 47)	17 10	80.1	*4.8						
2	0 58	11 46	5 30	10 48	(17 01)	71.4	11.5	41.1	30.1	SW.	1.5	—15.7	59.9
	(13 27)	23 55	*17 56	(10 28)	16 58	79.7	*2.8						
3	1 55	-----	6 05	-----	(16 38)	-----	8.5	40.7	30.2	E.	1.2	—11.6	60.1
	(14 23)	12 21	18 24	10 26	16 29	70.1	6.8						
4	2 50	0 22	6 48	(9 59)	(16 25)	78.3	4.0	39.3	30.1	S.	2.2	— 6.8	60.1
	(15 17)	13 10	19 15	10 20	16 25	69.2	4.1						
5	3 43	1 30	7 42	(10 13)	(16 25)	78.8	*5.8	39.9	29.9	SW.	2.1	— 1.7	59.9
	(16 09)	14 10	20 20	10 27	16 37	69.6	7.8						
6	4 34	2 30	8 29	(10 21)	(16 20)	75.8	8.6	39.6	29.8	W.	2.0	+ 3.5	59.5
	(17 00)	14 34	20 40	10 00	16 06	66.9	8.3						
7	5 26	2 35	8 37	(9 35)	(15 37)	70.8	12.7	40.4	29.8	SE.	8.1	+ 8.4	59.1
	(17 51)	15 30	21 31	10 04	16 05	64.3	19.2						
8	6 17	3 47	10 19	(9 56)	(16 28)	66.0	16.8	40.7	29.7	S.	7.8	+12.8	58.6
	(18 43)	16 35	22 37	10 18	16 20	62.7	17.8						
9	7 09	4 40	11 03	(9 57)	(16 20)	62.6	19.0	40.2	29.8	S.	3.0	+16.5	58.0
	(19 36)	17 11	23 18	10 02	16 09	60.8	19.3						
10	8 03	5 45	-----	(10 09)	-----	60.8	-----	40.9	29.9	SE.	4.1	+19.2	57.5
	(20 30)	18 39	12 40	10 36	(17 04)	59.8	20.3						
11	8 57	7 16	0 45	(10 46)	16 42	55.6	27.3	40.1	30.0	S.	2.0	+20.8	56.9
	(21 24)	20 00	13 45	11 03	(17 15)	60.1	19.1						
12	9 51	8 44	2 29	(11 20)	17 32	57.6	21.9	29.9	30.0	W.	1.2	+21.2	56.5
	(22 17)	20 58	14 45	11 07	(17 21)	65.9	15.6						
13	10 43	9 30	3 18	(11 13)	17 27	63.2	21.5	43.0	29.6	SE.	4.2	+20.6	56.0
	(23 09)	22 00	15 35	11 17	(17 18)	73.9	15.8						
14	11 34	10 22	4 23	(11 13)	17 40	67.4	21.8	44.5	29.5	S.	1.2	+18.9	55.5
	(23 59)	22 57	16 35	11 23	(17 26)	77.1	13.9						
15	-----	10 57	4 50	(10 58)	17 16	70.8	17.6	45.1	29.5	SE.	7.1	+16.3	55.1
	12 23	23 20	17 06	10 57	(17 07)	79.7	14.6						
16	(0 46)	11 45	5 43	(10 59)	17 20	72.5	13.6	45.8	29.5	SE.	5.6	+13.1	54.7
	13 09	-----	17 58	-----	(17 12)	-----	16.8						
17	(1 31)	0 15	6 19	11 06	17 10	80.8	15.6	45.4	29.7	S.	3.9	+ 9.4	54.4
	13 53	12 20	18 22	(10 49)	(16 51)	72.3	12.8						
18	(2 15)	0 30	6 31	10 37	16 38	76.8	14.8	45.4	29.5	E.	2.9	+ 5.3	54.2
	14 36	12 35	18 48	(10 20)	(16 33)	73.7	17.3						
19	(2 57)	0 46	7 06	10 10	16 30	77.8	17.6	46.8	29.5	W.	0.5	+ 1.1	54.1
	15 17	13 15	19 20	(10 18)	(16 23)	73.2	20.3						
20	(3 38)	1 28	7 20	10 11	16 03	75.8	19.9	45.9	29.6	SW.	1.7	— 3.2	54.1
	15 59	13 32	19 44	(9 54)	(16 06)	70.6	21.2						
21	(4 20)	1 54	8 08	9 55	16 09	68.8	9.8	42.4	29.7	SW.	1.8	— 7.3	54.3
	16 41	14 10	20 20	(9 50)	(16 00)	65.6	25.3						
22	(5 03)	2 23	8 40	9 42	15 59	67.0	22.8	45.5	29.7	SW.	1.4	—11.2	54.7
	17 24	15 00	21 13	(9 57)	(16 10)	64.8	30.4						
23	(5 47)	3 20	9 38	9 56	16 14	62.4	25.8	44.7	29.8	SW.	2.0	—14.7	55.3
	18 10	15 55	22 13	(10 08)	(16 26)	59.0	34.3						
24	(6 34)	4 30	10 40	10 20	16 30	56.8	26.9	45.7	29.7	SW.	1.9	—17.7	55.9
	18 59	16 48	23 17	(10 14)	(16 43)	58.8	40.1						
25	(7 25)	5 33	11 45	10 34	16 46	60.2	32.8	48.4	29.6	SW.	1.4	—19.8	56.7
	19 51	18 20	-----	(10 55)	-----	61.8	-----						
26	(8 18)	6 51	0 37	11 00	(17 12)	59.3	39.0	48.1	29.6	S.	4.4	—21.0	57.6
	20 46	19 21	13 04	(11 03)	17 13	63.6	30.8						
27	(9 15)	8 10	1 24	11 24	(17 06)	64.3	37.9	49.8	29.4	S.	4.5	—21.0	58.6
	21 43	20 05	13 50	(10 50)	17 04	71.8	27.8						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
July 28	(10 13)	8 39	2 27	10 56	(17 12)	71.8	35.8	54.7	29.2	SE.	16.6	—19.7	59.5
	22 42	21 15	14 58	(11 02)	17 15	80.3	37.3						
29	(11 11)	10 00	3 54	11 18	(17 41)	80.8	27.9	51.5	29.5	SE.	2.8	—17.1	60.1
	23 40	22 24	16 14	(11 13)	17 32	82.1	17.8						
30		10 32	4 24	10 52	(17 13)	83.8	15.8	47.9	29.8	SE.	1.0	—13.4	60.7
	(12 08)	22 48	16 40	(10 40)	17 00	84.8	8.5						
31	0 37	11 10	5 03	10 33	(16 54)	82.0	12.8	47.8	29.6	W.	1.5	— 8.7	60.9
	(13 05)	23 35	17 22	(10 30)	16 45	91.0	8.0						
Aug. 1	1 32	11 50	5 48	10 18	(16 43)	83.8	11.3	48.1	29.6	S.	4.4	— 3.6	60.8
	(13 59)		18 10		16 38		6.3						
2	2 26	0 18	6 35	(10 19)	(16 36)	92.0	6.8	46.9	29.7	SE.	8.7	+ 1.8	60.5
	(14 53)	12 55	19 10	10 29	16 44	84.8	5.8						
3	3 20	1 17	7 35	(10 24)	(16 42)	*86.8	*7.2	45.1	29.9	E.	2.8	+ 6.9	60.0
	(15 47)	13 40	19 45	10 20	16 25	81.8	6.0						
4	4 13	1 53	8 03	(10 06)	(16 16)	81.6	7.3	43.4	29.9	NE.	1.2	+11.6	59.3
	(16 40)	14 28	20 45	10 15	16 32	76.8	8.9						
5	5 06	2 55	8 58	(10 15)	(16 18)	77.3	15.8	44.5	29.8	SE.	1.5	+15.5	58.6
	(17 33)	15 07	21 05	10 01	15 59	71.6	18.6						
6	5 59	3 17	9 32	(9 44)	(15 59)	69.3	20.6	43.0	30.0	SE.	8.3	+18.4	57.8
	(18 26)	15 43	21 50	9 44	15 51	61.3	20.8						
7	6 53	4 00	10 15	(9 34)	(15 49)	66.8	22.3	42.1	30.0	S.	2.3	+20.3	57.1
	(19 20)	17 35	23 53	10 42	17 00	58.0	23.1						
8	7 47	6 00		(10 40)		†60.8		46.1	29.7	SW.	1.4	+21.1	56.5
	(20 14)	18 40	12 06	10 53	(16 46)	61.7	31.8						
9	8 40	7 20	1 05	(11 06)	17 18	60.8	37.8	48.9	29.5	SE.	8.0	+20.7	55.9
	(21 06)	20 04	13 35	11 24	(17 21)	68.9	32.6						
10	9 31	8 40	2 25	(11 34)	17 45	62.4	32.3	47.9	29.7	S.	1.4	+19.3	55.4
	(21 56)	21 15	14 55	11 44	(17 49)	72.8	26.4						
11	10 20	9 35	3 24	(11 39)	17 53	60.9	27.8	47.3	29.7	S.	1.7	+17.0	54.9
	(22 43)	22 12	15 40	11 52	(17 44)	78.9	23.6						
12	11 06	10 35	4 23	(11 52)	18 03	71.1	23.6	48.3	29.8	SE.	4.1	+14.0	54.6
	(23 29)	22 53	16 40	11 47	(17 57)	†79.3	19.4						
13	11 51	11 20	5 10	(11 51)	18 04	73.8	21.8	48.7	29.8	SE.	10.6	+10.5	54.3
		23 23	17 25	11 32	(17 56)	82.8	18.3						
14	(0 13)	11 28	5 30	(11 15)	17 39	77.1	18.8	48.7	29.9	SE.	8.4	+ 6.5	54.1
	12 34	23 50	17 45	11 16	(17 32)	86.3	15.3						
15	(0 55)		6 00		17 26		14.6	48.7	29.9	N.	1.8	+ 2.4	54.0
	13 15	12 03	18 13	(11 08)	(17 18)	77.0	16.6						
16	(1 36)	0 15	6 18	11 00	17 03	86.9	16.3	49.3	29.8	SW.	1.2	— 1.9	53.9
	13 57	12 30	18 50	(10 54)	(17 14)	78.8	17.8						
17	(2 18)	1 03	7 15	11 06	17 18	80.8	*16.8	48.3	29.9	S.	1.6	— 6.0	54.1
	14 38	13 25	19 20	(11 07)	(17 02)	74.8	20.8						
18	(2 59)	1 18	7 22	10 40	16 44	82.2	15.8	47.2	29.9	SE.	0.6	— 9.9	54.3
	15 21	13 25	19 23	(10 26)	(16 24)	73.3	*20.0						
19	(3 43)	1 30	7 35	10 09	16 14	*73.0	*19.0	47.9	29.6	SE.	9.7	—13.5	54.7
	16 05	13 43	20 00	(10 00)	(16 17)	*83.0	12.0						
20	(4 28)	2 08	8 23	10 03	16 18	77.3	27.8	50.3	29.6	SE.	10.6	—16.6	55.2
	16 52	14 45	21 02	(10 17)	(16 34)	74.8	*28.6						
21	(5 16)	3 06	9 10	10 14	16 18	69.9	31.3	50.9	29.7	SE.	1.3	—18.9	55.8
	17 41	15 21	21 30	(10 05)	(16 14)	70.8	32.8						
22	(6 07)	3 40	9 40	9 59	15 59	67.8	35.6	51.7	29.7	SW.	1.2	—20.5	56.6
	18 34	16 03	22 07	(9 56)	(16 00)	65.0	43.7						
23	(7 01)	4 18	10 30	9 44	15 56	61.4	36.8	49.9	29.8	S.	3.0	—20.9	57.5
	19 28	16 37	22 49	(9 36)	(15 48)	59.0	38.6						
24	(7 56)	5 32	11 42	10 04	16 14	64.3	36.0	49.8	29.9	SE.	3.0	—20.2	58.5
	20 25	17 56		(10 00)		59.8							
25	(8 53)	6 45	0 35	10 20	(16 39)	61.3	40.8	48.3	30.0	SE.	2.6	—18.2	59.4
	21 22	19 50	13 30	(10 57)	17 05	*64.8	30.8						
26	(9 50)	8 32	2 03	11 10	(17 10)	*61.8	*31.8	45.6	30.0	E.	0.4	—15.1	60.3
	22 19	20 58	14 47	(11 08)	17 25	*72.8	20.8						
27	(10 48)	9 26	3 15	11 07	(17 25)	*69.8	20.8	46.0	30.0	SW.	0.3	—10.9	60.9
	23 16	21 55	15 40	(11 07)	17 21	*77.0	*14.8						
28	(11 44)	10 20	4 05	11 04	(17 17)	*80.8	23.4	47.9	30.0	S.	0.9	— 5.9	61.3
		22 40	16 27	(10 56)	17 11	*84.8	10.0						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	'
Aug. 29	0 12	11 15	4 50	11 03	(17 06)	86.3	8.8	48.2	29.8	S.	4.1	− 0.5	61.4
	(12 40)	23 20	17 15	(10 40)	17 03	91.8	8.9						
30	1 07	11 48	5 30	10 41	(16 50)	88.8	6.8	49.1	29.9	SE.	1.6	+ 4.8	61.1
	(13 35)		18 03		16 56		7.6						
31	2 02	0 10	6 23	(10 35)	(16 48)	94.2	5.8	50.2	29.7	SE.	2.1	+ 9.8	60.5
	(14 30)	12 20	18 40	10 18	16 38	91.8	11.3						
Sept. 1	2 57	0 55	7 07	(10 25)	(16 37)	91.4	10.4	51.7	29.6	W.	2.5	+14.1	59.8
	(15 25)	13 08	19 17	10 11	16 20	89.8	15.8						
2	3 52	1 30	7 45	(10 05)	(16 20)	90.8	16.8	53.1	29.6	SW.	1.1	+17.5	58.9
	(16 20)	13 50	20 05	9 58	16 13	85.6	23.3						
3	4 48	2 18	8 28	(9 58)	(16 08)	83.9	22.8	53.6	29.6	S.	1.3	+19.7	58.0
	(17 15)	14 41	20 55	9 53	16 07	79.7	31.8						
4	5 42	3 06	9 17	(9 51)	(16 02)	79.8	24.0	54.1	29.6	NW.	0.4	+20.7	57.1
	(18 09)	15 30	21 50	9 48	16 08	78.2	42.3						
5	6 36	4 05	10 20	(9 56)	(16 11)	67.8	28.6	52.1	29.7	E.	1.5	+20.6	56.3
	(19 02)	16 25	22 43	9 49	16 07	66.8	45.3						
6	7 28	4 55	11 10	(9 53)	(16 08)	65.8	31.8	53.9	29.6	N.	20.4	+19.5	55.6
	(19 53)	17 31	23 55	10 03	16 27	68.8	48.7						
7	8 17	6 15		(10 22)		67.8		55.3	29.7	NE.	6.5	+17.5	55.1
	(20 41)	18 48	12 27	10 31	(16 34)	64.8	*40.8						
8	9 04	7 16	1 03	(10 35)	16 46	*70.8	*44.8	53.9	29.9	S.	1.8	+14.7	54.6
	(21 27)	19 50	13 28	10 46	(16 47)	68.8	33.8						
9	9 49	8 17	2 07	(10 50)	17 03	69.8	39.8	50.5	30.0	W.	1.7	+11.3	54.3
	(22 11)	20 52	14 39	11 03	(17 12)	71.8	27.3						
10	10 32	9 30	3 16	(11 19)	17 27	69.2	22.8	46.1	30.2	NE.	0.6	+ 7.5	54.1
	(22 53)	21 53	15 43	11 21	(17 32)	73.8	19.8						
11	11 14	10 48	4 20	(11 55)	17 48	80.0	15.6	48.1	30.1	N.	0.5	+ 3.4	54.0
	(23 35)	23 15	16 58	12 01	(18 05)	78.6	19.8						
12	11 56	11 30	5 25	(11 55)	18 11	77.3	17.5	47.9	29.9	E.	1.3	− 0.7	53.9
		23 50	17 37	11 54	(18 02)	78.8	18.8						
13	(0 17)	11 55	5 53	(11 38)	17 57	77.8	†15.8	48.1	29.9	SE.	1.1	− 4.9	54.0
	12 38		18 07		(17 50)		18.3						
14	(0 59)	0 15	6 20	11 37	17 42	81.8	15.7	48.7	29.8	NE.	3.4	− 8.8	54.1
	13 20	12 33	18 40	(11 34)	(17 41)	80.0	17.8						
15	(1 42)	0 46	*6 47	11 26	17 27	83.2	*8.8	42.5	29.8	NE.	2.8	−12.5	54.4
	14 04	12 47	19 05	(11 05)	(17 23)	*73.8	6.8						
16	(2 26)	1 02	7 00	10 58	16 56	65.8	2.8	36.1	30.0	E.	1.2	−15.7	54.7
	14 49	13 05	19 20	(10 39)	(16 54)	64.3	10.8						
17	(3 13)	1 20	7 22	10 31	16 33	65.3	9.6	39.4	30.1	NE.	1.3	−18.2	55.2
	15 37	13 35	19 25	(10 22)	(16 12)	68.0	19.3						
18	(4 02)	1 37	7 45	10 00	16 08	63.8	7.8	40.5	30.1	N.	5.6	−19.9	55.8
	16 27	13 45	20 05	(9 43)	(16 03)	66.8	25.8						
19	(4 53)	2 18	8 20	9 51	15 53	60.8	16.9	41.9	29.8	NE.	3.9	−20.7	56.5
	17 19	14 33	20 44	(9 40)	(15 51)	63.4	26.1						
20	(5 46)	2 55	9 00	9 36	15 41	59.8	20.4	44.1	29.4	N.	2.7	−20.3	57.3
	18 13	15 13	21 20	(9 27)	(15 34)	68.0	26.8						
21	(6 40)	3 30	10 00	9 17	15 47	58.8	41.0	51.7	29.3	N.	1.4	−18.9	58.2
	19 08	16 35	22 47	(9 55)	(16 07)	67.0	46.6						
22	(7 36)	4 55	11 32	9 47	16 24	61.6	38.8	51.6	29.5	SW.	5.7	−16.3	59.1
	20 04	18 18		(10 42)		65.8							
23	(8 32)	6 56	0 58	10 52	(17 22)	62.9	32.3	49.3	29.5	SW.	11.1	−12.6	60.0
	20 59	19 19	*13 10	(10 47)	17 06	70.6	31.8						
24	(9 27)	7 30	1 22	10 31	(16 50)	64.8	32.8	48.1	29.5	NE.	4.7	− 8.1	60.7
	21 54	20 15	13 40	(10 48)	16 41	74.4	26.2						
25	(10 22)	8 45	2 29	10 51	(17 02)	64.3	19.8	46.9	29.7	E.	6.1	− 3.0	61.2
	22 49	21 25	15 12	(11 03)	17 18	88.8	17.5						
26	(11 16)	9 50	3 39	11 01	(17 17)	84.5	16.7	52.7	29.5	NE.	1.2	+ 2.4	61.4
	23 44	22 25	16 08	(11 09)	17 19	96.8	14.8						
27		10 52	4 40	11 08	(17 24)	90.8	15.8	52.7	29.6	S.	4.0	+ 7.6	61.3
	(12 12)	23 25	17 15	(11 13)	17 31	99.8	7.3						
28	0 40	11 45	5 37	11 05	(17 25)	88.3	9.8	49.2	29.8	SE.	0.8	+12.3	60.8
	(13 08)		18 06		17 26		2.8						
29	1 37	[illegible]	6 35	(11 14)	(17 27)	*91.8	5.0	46.4	30.0	N.	0.7	+16.1	60.1
	(14 06)	[illegible]	18 48	11 06	17 11	85.6	8.8						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Sept. 30	2 35	1 02	7 16	(10 56)	(17 10)	82.8	1.3	45.9	29.7	NE.	3.2	+18.8	59.2
	(15 04)	13 30	19 23	10 55	16 48	84.3	18.2						
Oct. 1	3 32	*1 40	7 43	(10 36)	(16 39)	*78.8	14.8	49.5	29.8	NE.	9.5	+20.3	58.2
	(16 00)	13 50	20 10	10 18	16 38	83.3	23.8						
2	4 28	2 30	8 45	(10 30)	(16 45)	75.8	16.5	49.9	29.7	NE.	8.7	+20.6	57.2
	(16 55)	14 58	21 13	10 30	16 45	76.8	34.3						
3	5 22	3 23	9 35	(10 28)	(16 40)	70.8	24.8	51.4	29.6	NE.	13.2	+19.7	56.4
	(17 48)	15 49	21 55	10 27	16 33	73.1	36.8						
4	6 13	4 20	10 28	(10 32)	(16 40)	66.8	41.8	53.0	29.6	N.	6.4	+17.9	55.6
	(18 37)	16 50	23 20	10 37	17 07	67.1	39.8						
5	7 01	5 23	11 27	(10 46)	(16 50)	59.1	40.8	50.4	29.8	NE.	1.1	+15.3	55.0
	(19 24)	17 44	23 55	10 43	16 54	63.1	36.8						
6	7 47	6 20	----------	(10 56)	----------	58.8	----------	52.0	29.8	E.	1.2	+12.0	54.5
	(20 09)	18 47	12 27	11 00	(17 03)	67.0	43.8						
7	8 31	7 40	1 05	(11 31)	17 18	61.0	40.8	51.1	29.9	E.	0.6	+ 8.4	54.2
	(20 52)	20 23	13 58	11 52	(17 49)	70.4	32.3						
8	9 13	8 38	2 28	(11 46)	17 57	67.1	38.4	49.9	29.9	E.	2.0	+ 4.4	54.0
	(21 34)	20 58	14 47	11 45	(17 55)	70.8	27.6						
9	9 55	9 45	3 16	(12 11)	18 03	72.8	23.8	48.6	29.6	E.	2.9	+ 0.3	54.0
	(22 16)	22 20	16 00	12 25	(18 26)	73.8	24.8						
10	10 36	11 03	4 47	(12 47)	18 52	†75.3	22.6	48.1	29.5	NE.	0.7	− 3.9	54.0
	(22 57)	23 25	17 20	12 49	(19 04)	†74.5	20.8						
11	11 19	11 42	5 38	(12 45)	19 02	74.2	19.8	47.8	29.6	NE.	1.8	− 7.9	54.2
	(23 40)	----------	17 50	----------	(18 53)	----------	20.8						
12	----------	0 20	6 42	13 01	19 23	77.1	23.8	47.8	29.6	NE.	2.0	−11.6	54.4
	12 02	12 39	18 45	(12 59)	(19 05)	70.7	22.8						
13	(0 24)	0 50	7 03	12 48	19 01	68.3	27.2	48.9	29.6	NE.	1.1	−14.9	54.7
	12 47	12 00	18 00	(11 36)	(17 36)	79.0	19.3						
14	(1 11)	0 18	6 20	11 31	17 33	76.6	12.8	46.7	29.7	N.	4.3	−17.5	55.1
	13 35	11 50	18 13	(10 39)	(17 02)	81.8	13.1						
15	(2 00)	0 12	6 17	10 37	16 42	77.5	13.5	47.2	29.7	NE.	2.6	−19.4	55.5
	14 24	12 22	18 27	(10 22)	(16 27)	81.2	18.9						
16	(2 50)	0 40	6 50	10 16	16 26	76.5	15.5	46.0	30.0	NE.	1.6	−20.4	56.0
	15 16	13 15	19 25	(10 25)	(16 35)	75.0	19.0						
17	(3 42)	1 35	7 53	10 19	16 37	69.7	13.5	43.1	30.1	E.	0.6	−20.4	56.6
	16 08	14 10	20 09	(10 28)	(16 27)	67.5	22.5						
18	(4 35)	2 20	8 23	10 12	16 15	66.8	19.3	43.6	30.0	E.	0.5	−19.2	57.3
	17 02	14 25	20 35	(9 50)	(16 00)	67.0	26.1						
19	(5 28)	2 50	9 08	9 48	16 06	57.0	21.3	40.3	30.2	NE.	0.9	−17.0	58.0
	17 55	15 16	21 32	(9 48)	(16 04)	58.7	25.3						
20	(6 22)	3 40	9 55	9 45	16 00	49.5	25.0	39.6	30.1	NW.	0.2	−13.8	58.7
	18 48	16 10	23 25	(9 48)	(17 03)	55.0	26.0						
21	(7 14)	5 25	11 25	10 37	16 37	56.5	27.3	42.6	29.9	E.	1.8	− 9.7	59.5
	19 41	18 12	----------	(10 58)	----------	60.7	----------						
22	(8 07)	6 55	0 33	11 14	(17 19)	61.0	26.3	41.9	29.8	NW.	1.2	− 5.0	60.1
	20 34	19 26	13 28	(11 19)	17 47	56.5	24.7						
23	(9 01)	7 53	1 30	11 19	(17 23)	62.5	18.5	39.5	30.1	S.	0.4	+ 0.1	60.6
	21 28	20 20	14 12	(11 19)	17 38	67.0	15.5						
24	(9 55)	8 53	2 35	11 25	(17 34)	68.5	10.0	38.7	30.2	E.	0.4	+ 5.3	60.9
	22 22	21 20	15 13	(11 25)	17 45	71.0	10.0						
25	(10 50)	9 49	3 36	11 27	(17 41)	67.5	− 0.2	36.6	30.2	E.	0.2	+10.2	60.9
	23 19	22 20	15 55	(11 30)	17 33	70.5	6.5						
26	(11 47)	11 00	4 26	11 41	(17 36)	87.7	− 3.4	36.3	30.3	E.	0.1	+14.4	60.6
	----------	23 20	17 25	(11 33)	18 06	70.2	− 7.9						
27	0 16	11 28	5 20	11 12	(17 33)	78.0	− 8.3	35.3	30.3	E.	0.9	+17.7	60.0
	(12 45)	23 43	17 30	(10 58)	17 14	73.2	− 1.5						
28	1 15	----------	5 50	----------	(17 05)	----------	− 5.6	37.3	30.2	NE.	0.2	+19.7	59.3
	(13 44)	12 05	18 12	10 50	16 57	81.5	2.5						
29	2 13	0 17	6 20	(10 33)	(16 36)	72.0	− 1.3	37.0	30.1	NE.	0.8	+20.5	58.4
	(14 42)	12 35	18 37	10 22	16 24	79.2	− 3.1						
30	3 10	0 45	6 55	(10 03)	(16 13)	70.3	− 3.8	37.9	30.0	E.	0.1	+20.0	57.4
	(15 37)	13 07	19 20	9 57	16 10	76.9	14.7						
31	4 04	1 25	7 35	(9 48)	(15 58)	64.8	12.4	40.8	30.0	0	0	+18.5	56.5
	(16 30)	13 50	20 00	9 46	15 56	68.2	19.2.						

Table V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Nov. 1	4 55	2 08	8 10	(9 38)	(15 40)	60.0	19.7	41.7	29.8	E.	0.8	+16.0	55.7
	(17 19)	14 20	20 45	9 25	15 50	64.0	25.1						
2	5 42	2 53	9 03	(9 34)	(15 44)	57.2	24.2	42.9	29.7	E.	0.3	+12.9	55.1
	(18 05)	15 30	21 55	9 48	16 13	61.1	30.2						
3	6 27	4 12	10 25	(10 07)	(16 20)	54.9	34.1	44.7	29.7	S.	0.2	+ 9.4	54.6
	(18 49)	16 55	23 23	10 28	16 56	59.8	30.5						
4	7 10	6 00	----	(11 11)	----	53.7	----	43.7	29.9	S.	0.8	+ 5.5	54.3
	(19 31)	18 18	12 12	11 08	(17 23)	57.0	33.3						
5	7 52	7 05	0 35	(11 34)	17 25	55.5	30.2	43.2	29.9	E.	1.0	+ 1.4	54.1
	(20 13)	19 55	13 23	12 03	(17 52)	59.4	30.5						
6	8 34	8 43	2 30	(12 30)	18 38	58.0	23.2	42.3	30.0	NE.	1.1	− 2.7	54.1
	(20 55)	21 25	15 17	12 51	(19 04)	61.8	26.7						
7	9 16	9 33	3 30	(12 38)	18 56	64.2	20.5	42.3	30.1	NE.	2.5	− 6.8	54.2
	(21 37)	21 40	15 38	12 24	(18 43)	63.7	22.7						
8	9 59	9 45	3 42	(12 08)	18 26	68.3	15.2	40.2	30.1	E.	3.2	−10.6	54.5
	(22 21)	21 57	15 50	11 58	(18 13)	62.7	17.0						
9	10 44	10 10	4 00	(11 49)	18 01	67.5	6.7	36.8	30.4	E.	0.8	−14.0	54.8
	(23 07)	22 25	16 17	11 41	(17 56)	62.2	10.1						
10	11 31	10 47	4 35	(11 40)	17 51	72.7	3.7	38.1	30.2	E.	0.4	−16.9	55.2
	(23 55)	23 00	16 55	11 29	(17 48)	66.9	9.7						
11	----	11 10	5 03	(11 15)	17 32	76.7	5.2	41.9	29.9	SE.	0.2	−19.0	55.6
	12 20	23 25	17 20	11 05	(17 25)	72.7	13.5						
12	(0 46)	11 37	5 32	(10 51)	17 12	82.4	9.1	46.1	29.5	SE.	0.2	−20.2	56.1
	13 12	23 45	17 40	10 33	(16 54)	75.8	16.6						
13	(1 38)	----	5 50	----	16 38	----	13.7	49.6	29.3	E.	1.3	−20.4	56.6
	14 05	12 30	18 15	(10 52)	(16 37)	86.1	23.2						
14	(2 31)	0 28	6 40	10 23	16 35	76.3	15.9	50.6	29.3	SE.	0.9	−19.5	57.1
	14 58	12 55	19 10	(10 24)	(16 39)	84.4	25.4						
15	(3 25)	1 15	7 23	10 17	16 25	76.7	24.1	51.8	29.3	SE.	2.4	−17.5	57.6
	15 22	13 40	19 48	(10 15)	(16 23)	84.1	25.7						
16	(4 18)	1 55	7 58	10 33	16 36	69.0	21.2	46.6	29.6	N.	4.6	−14.6	58.1
	16 44	14 10	20 23	(9 52)	(16 05)	72.3	23.7						
17	(5 10)	2 45	8 52	10 01	16 08	63.1	22.4	44.7	29.7	E.	1.0	−10.8	58.6
	17 36	15 20	21 35	(10 10)	(16 25)	69.5	25.9						
18	(6 02)	3 52	10 20	10 16	16 44	57.4	26.7	43.6	29.8	0	0	− 6.3	59.1
	18 27	16 30	22 57	(10 28)	(16 55)	64.2	25.1						
19	(6 53)	5 30	11 52	11 03	17 25	57.2	28.6	43.3	29.9	E.	0.2	− 1.5	59.5
	19 18	18 15	----	(11 22)	----	62.7	----						
20	(7 44)	6 50	0 32	11 32	(17 39)	58.7	23.5	42.2	30.0	E.	0.8	+ 3.5	59.8
	20 10	19 20	13 12	(11 36)	17 54	63.5	25.7						
21	(8 37)	7 40	1 28	11 30	(17 44)	62.1	15.9	38.8	30.2	E.	0.5	+ 8.4	60.0
	21 04	20 09	13 50	(11 32)	17 40	62.2	17.5						
22	(9 31)	8 45	2 18	11 41	(17 41)	63.7	5.3	34 5	30.3	E.	0.1	+12.8	60.0
	21 59	21 18	15 05	(11 47)	18 01	60.0	8.5						
23	(10 28)	9 40	3 28	11 41	(17 57)	68.8	− 0.1	33.6	30.4	0	0	+16.4	59.8
	22 57	21 58	15 50	(11 30)	17 51	63.2	3.9						
24	(11 26)	10 22	4 10	11 25	(17 42)	73.9	− 3.3	35.5	30.3	0	0	+19.0	59.4
	23 55	22 40	16 35	(11 14)	17 38	68.7	3.5						
25	----	10 55	4 47	11 00	(17 21)	80.2	− 1.2	37.3	30.3	S.	0.2	+20.3	58.8
	(12 24)	23 10	17 00	(10 46)	17 05	68.5	2.7						
26	0 53	11 30	5 17	10 37	(16 53)	77.7	− 3.5	37.1	30.5	SE.	0.2	+20.4	58.1
	(13 22)	23 47	17 40	(10 25)	16 47	68.7	3.7						
27	1 50	----	5 55	----	(16 33)	----	1.2	39.9	30.2	SE.	0.5	+19.2	57.3
	(14 17)	12 10	18 22	10 20	16 32	79.2	9.4						
28	2 43	0 30	6 43	(10 13)	(16 26)	70.7	7.2	41.4	30.2	E.	0.1	+17.1	56.5
	(15 08)	12 58	19 13	10 15	16 30	78.2	11.7						
29	3 33	1 25	7 37	(10 17)	(16 29)	65.3	10.4	40.6	30.2	E.	0.2	+14.2	55.8
	(15 57)	13 53	20 10	10 20	16 37	71.1	16.5						
30	4 21	2 25	8 42	(10 28)	(16 45)	61.4	19.7	41.9	30.0	E.	0.3	+10.7	55.2
	(16 43)	14 55	21 08	10 34	16 47	67.5	20.2						
Dec. 1	5 05	3 15	9 22	(10 32)	(16 39)	58.7	24.0	41.2	30.0	E.	0.2	+ 6.8	54.7
	(17 27)	15 25	21 28	10 20	16 23	58.5	24.3						
2	5 48	3 38	9 50	(10 11)	(16 23)	55.7	29.2	42.2	30.0	0	0	+ 2.7	54.3
	(18 09)	16 05	22 27	10 17	16 39	59.7	25.5						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1882.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Dec. 3	6 30	4 48	11 05	(10 39)	(16 56)	53.4	30.7	40.8	30.1	E.	0.2	− 1.4	54.2
	(18 51)	17 23	23 40	10 53	17 10	55.5	24.2						
4	7 11	6 03	------	(11 12)	------	49.2	------	39.2	30.3	E.	0.1	− 5.5	54.2
	(19 33)	18 35	12 20	11 24	(17 29)	54.1	30.2						
5	7 54	7 22	0 58	(11 49)	17 47	53.7	20.3	40.7	30.0	E.	0.3	− 9.4	54.4
	(20 16)	20 08	13 47	12 14	(18 14)	56.7	29.2						
6	8 38	8 54	2 42	(12 38)	18 48	59.9	28.7	43.7	30.0	E.	0.9	−12.9	54.8
	(21 01)	21 34	15 27	12 56	(19 11)	49.2	31.2						
7	9 24	9 40	3 38	(12 39)	19 00	54.2	26.2	41.2	30.0	SE.	0.3	−16.0	55.2
	(21 48)	21 46	15 45	12 22	(18 44)	61.7	27.7						
8	10 12	10 07	4 00	(12 19)	18 36	69.5	19.7	42.7	30.1	S.	0.2	−18.4	55.7
	(22 48)	22 15	16 10	12 03	(18 22)	62.7	21.4						
9	11 04	10 18	4 17	(11 30)	18 05	71.2	10.9	40.2	30.3	E.	0.3	−20.0	56.3
	(23 30)	22 20	16 20	11 16	(17 32)	66.5	15.0						
10	11 57	10 30	4 23	(11 00)	17 19	73.9	4.7	39.0	30.4	NE.	0.5	−20.5	56.9
	------	22 53	16 43	10 56	(17 13)	65.6	12.0						
11	(0 24)	11 25	5 07	(11 01)	17 10	76.4	1.7	37.6	30.5	NE.	0.7	−19.9	57.4
	12 52	23 47	17 35	10 55	(17 11)	66.7	6.2						
12	(1 19)	------	5 55	------	17 03	------	− 0.3	36.6	30.6	NE.	0.2	−18.2	57.9
	13 47	12 15	18 12	(10 46)	(16 53)	75.6	6.0						
13	(2 14)	0 18	6 25	10 31	16 38	64.1	− 1.6	36.5	30.5	NE.	0.3	−15.4	58.3
	14 40	12 30	18 40	(10 16)	(16 26)	74.5	7.9						
14	(3 07)	0 53	7 08	10 13	16 28	66.0	5.7	38.6	30.3	E.	0.2	−11.8	58.6
	15 33	*13 22	19 35	(10 15)	(16 28)	73.7	10.5						
15	(3 59)	1 43	7 50	10 10	16 17	63.7	6.9	37.7	30.4	NE.	0.2	− 7.4	58.9
	16 25	14 00	20 07	(10 01)	(16 08)	71.9	9.7						
16	(4 50)	2 20	8 33	9 55	16 08	58.1	9.0	35.4	30.5	E.	0.2	− 2.7	59.1
	17 15	14 40	20 50	(9 50)	(16 00)	63.6	9.2						
17	(5 40)	3 08	9 22	9 53	16 07	56.0	18.3	39.6	30.1	E.	0.1	+ 2.2	59.2
	18 06	15 43	21 55	(10 03)	(16 15)	65.7	19.2						
18	(6 32)	4 10	10 22	10 04	16 16	61.3	27.5	44.5	29.7	E.	0.2	+ 7.1	59.2
	18 58	16 35	23 02	(10 03)	(16 30)	67.5	23.7						
19	(7 24)	5 30	------	10 32	------	61.2	------	44.7	29.7	E.	0.2	+11.5	59.2
	19 51	18 20	12 00	(10 56)	17 02	65.5	28.7						
20	(8 18)	6 53	0 38	11 02	(17 14)	63.7	21.7	42.9	29.9	NE.	0.1	+15.3	59.1
	20 45	19 25	13 12	(11 07)	17 31	61.3	25.9						
21	(9 13)	8 00	1 40	11 15	(17 22)	64.5	14.2	40.3	30.2	NE.	0.2	+18.2	58.8
	21 41	20 28	14 20	(11 15)	17 35	62.9	19.7						
22	(10 10)	9 00	2 38	11 19	(17 25)	71.7	11.4	40.5	30.1	SE.	0.2	+19.9	58.5
	22 39	21 35	15 18	(11 25)	17 37	64.1	16.7						
23	(11 07)	10 02	3 50	11 23	(17 40)	73.2	5.5	37.8	30.3	E.	0.1	+20.5	58.0
	23 35	22 05	16 10	(10 58)	17 31	63.7	8.2						
24	------	10 38	4 15	11 03	(17 08)	77.2	2.2	39.4	30.1	N.	0.3	+19.9	57.5
	(12 03)	22 55	16 45	(10 52)	17 10	69.1	9.5						
25	0 30	11 15	5 08	10 45	(17 05)	83.2	5.0	42.0	30.0	S.	1.5	+18.1	56.9
	(12 56)	23 45	17 30	(10 49)	17 00	70.7	10.3						
26	1 22	------	6 07	------	(17 11)	------	5.2	40.1	30.2	E.	1.3	+15.5	56.2
	(13 47)	12 20	18 38	10 58	17 16	79.0	6.2						
27	2 12	0 48	6 55	(11 01)	(17 08)	67.9	6.0	39.6	30.2	E.	0.3	+12.2	55.6
	(14 35)	12 58	19 05	10 46	16 53	75.7	9.3						
28	2 58	1 12	7 15	(10 37)	(16 40)	67.5	10.2	43.2	30.0	E.	0.3	+ 8.4	55.1
	(15 20)	13 25	19 40	10 27	16 42	78.2	18.7						
29	3 42	1 45	7 53	(10 25)	(16 33)	70.3	17.0	45.6	29.9	SE.	2.1	+ 4.3	54.6
	(16 03)	14 03	20 12	10 21	16 30	75.2	19.1						
30	4 24	2 22	8 32	(10 19)	(16 29)	69.5	24.7	46.0	29.9	NE.	4.8	+ 0.2	54.4
	(16 45)	14 38	20 50	10 14	16 26	72.2	20.9						
31	5 06	2 55	8 55	(10 10)	(16 10)	62.2	23.3	41.6	30.2	NE.	1.0	− 3.9	54.2
	(17 27)	15 15	21 28	10 09	16 22	62.7	19.4						
1883.													
Jan. 1	5 48	3 50	9 58	(10 23)	(16 31)	53.7	25.2	38.1	30.4	NE.	0.1	− 7.9	54.3
	(18 09)	16 05	22 25	10 17	16 37	54.3	19.1						
2	6 31	4 40	10 45	(10 31)	(16 36)	50.0	28.9	37.1	30.1	E.	0.6	−11.6	54.5
	(18 53)	16 58	23 12	10 27	16 41	51.2	19.7						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1883.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Jan. 3	7 16	5 30	11 45	(10 37)	(16 52)	46.7	26.7	35.7	30.3	E.	0.7	−14.8	54.9
	(19 39)	18 07		10 51		47.5							
4	8 03	6 35	0 23	(10 56)	17 07	52.2	20.5	40.7	29.9	E.	0.3	−17.5	55.4
	(20 27)	19 40	13 10	11 37	(17 31)	56.7	33.5						
5	8 52	8 37	2 05	(12 10)	18 02	67.4	26.7	47.2	29.6	E.	0.8	−19.4	56.1
	(21 18)	21 07	15 00	12 15	(18 33)	62.7	34.3						
6	9 45	9 35	3 25	(12 17)	18 33	71.2	25.1	47.6	29.6	SE.	0.4	−20.4	56.8
	(22 12)	21 55	15 55	12 10	(18 37)	66.9	27.3						
7	10 39	10 05	4 00	(11 53)	18 15	80.2	23.7	50.5	29.5	E.	0.5	−20.3	57.5
	(23 07)	22 20	16 12	11 41	(18 00)	74.5	28.3						
8	11 35	10 50	4 30	(11 43)	17 51	84.2	18.7	49.9	29.8	E.	0.4	−19.0	58.2
		23 10	17 05	11 35	(17 58)	74.9	22.0						
9	(0 03)	11 18	5 13	(11 15)	17 38	88.0	15.3	48.8	30.1	E.	0.3	−16.6	58.8
	12 31	23 40	17 30	11 09	(17 27)	77.2	17.7						
10	(0 58)	11 58	5 50	(11 00)	17 19	86.7	8.7	45.5	30.3	E.	0.3	−13.1	59.3
	13 26		18 10		(17 12)		9.7						
11	(1 52)	0 20	6 30	10 54	17 04	76.1	2.2	42.9	30.2	E.	0.3	− 8.9	59.5
	14 19	12 42	18 50	(10 50)	(16 58)	84.4	6.5						
12	(2 45)	0 58	7 05	10 39	16 46	77.0	5.4	43.9	30.0	E.	0.1	− 4.1	59.7
	15 12	13 15	19 22	(10 30)	(16 37)	86.2	8.2						
13	(3 38)	1 35	7 40	10 23	16 28	76.4	7.0	43.4	29.9	E.	0.2	+ 0.9	59.6
	16 04	14 00	20 10	(10 22)	(16 32)	82.7	7.7						
14	(4 29)	2 20	8 28	10 16	16 24	72.7	13.2	44.5	29.8	F.	0.2	+ 5.8	59.4
	16 55	14 40	20 50	(10 11)	(16 21)	78.7	14.7						
15	(5 21)	3 00	9 08	10 05	16 13	73.0	19.7	45.1	29.8	E.	0.2	+10.4	59.2
	17 48	15 18	21 30	(9 57)	(16 09)	74.3	15.9						
16	(6 14)	3 50	10 05	10 02	16 17	64.7	22.3	41.3	30.0	0	0	+14.3	58.8
	18 41	16 20	22 28	(10 06)	(16 14)	62.7	17.0						
17	(7 08)	4 45	11 00	10 04	16 19	56.9	25.9	39.7	30.0	S.	0.5	+17.4	58.4
	19 36	17 12	23 25	(10 04)	(16 17)	57.2	19.4						
18	(8 04)	5 53		10 17		55.0		40.7	29.9	S.	0.2	+19.4	58.0
	20 31	18 55	12 25	(10 51)	16 49	59.2	27.7						
19	(8 59)	7 45	1 20	11 14	(17 16)	60.9	21.2	43.4	29.8	E.	0.2	+20.4	57.6
	21 26	20 38	14 15	(11 39)	17 44	63.2	28.4						
20	(9 54)	9 12	2 57	11 46	(17 58)	70.5	21.2	43.5	30.1	0	0	+20.1	57.1
	22 21	22 05	15 40	(12 11)	18 14	62.4	21.5						
21	(10 47)	10 25	4 15	12 04	(18 21)	73.7	12.9	42.3	30.3	NE.	0.4	+18.8	56.6
	23 13	22 37	16 30	(11 50)	18 09	66.2	15.5						
22	(11 38)	10 50	4 45	11 37	(17 58)	81.7	14.5	45.3	29.8	E.	0.4	+16.5	56.2
		22 58	16 55	(11 20)	17 42	73.5	15.2						
23	0 03	11 10	5 03	11 07	(17 25)	84.1	11.4	46.4	29.4	E.	0.5	+13.5	55.7
	(12 27)	23 35	17 20	(11 08)	17 17	75.7	14.9						
24	0 51		5 45		(17 18)		11.7	48.7	29.2	E.	0.4	+ 9.9	55.2
	(13 13)	12 07	18 25	11 16	17 34	87.1	17.3						
25	1 36	0 35	6 45	(11 22)	(17 32)	81.2	16.9	51.6	29.2	NE.	0.2	+ 5.9	54.8
	(13 57)	12 50	18 55	11 14	17 19	90.7	18.7						
26	2 19	0 58	7 00	(11 01)	(17 03)	80.7	16.2	48.9	29.4	NE.	0.2	+ 1.8	54.4
	(14 [illegible])	13 07	19 12	10 48	16 53	83.9	14.4						
27	3 02	1 20	7 25	(10 40)	(16 45)	75.5	14.7	45.9	29.6	E.	1.5	− 2.4	54.2
	(15 23)	13 35	19 41	10 33	16 39	78.1	15.9						
28	3 44	1 55	8 00	(10 32)	(16 37)	72.2	18.7	45.2	29.7	0	0	− 6.4	54.1
	(16 05)	14 07	20 15	10 23	16 31	74.8	16.7						
29	4 26	2 25	8 30	(10 20)	(16 25)	67.0	22.0	43.1	29.9	E.	1.0	−10.1	54.2
	(16 47)	14 35	20 42	10 09	16 16	67.7	17.9						
30	5 09	2 48	8 53	(10 01)	(16 06)	60.3	23.7	40.9	30.2	●	0	−13.5	54.4
	(17 32)	15 08	21 25	9 59	16 16	61.0	19.3						
31	5 55	3 40	9 45	(10 08)	(16 13)	56.0	28.4	40.2	30.2	E.	0.1	−16.4	54.9
	(18 18)	15 53	22 00	9 58	16 05	55.4	21.3						
Feb. 1	6 42	4 10	10 20	(9 52)	(16 02)	54.0	31.4	40.1	30.2	E.	0.1	−18.5	55.4
	(19 07)	16 40	22 58	9 58	16 16	50.5	25.4						
2	7 32	5 20	11 55	(10 13)	(16 48)	52.7	37.5	42.9	29.8	NE.	0.6	−19.9	56.1
	(19 58)	18 05		10 33		55.5							
3	8 25	6 55	0 30	(10 57)	16 58	57.2	26.7	43.1	29.8	E.	0.1	−20.3	57.0
	(20 52)	19 45	13 27	11 20	(17 29)	55.6	31.6						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1883.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Feb. 4	9 19	8 25	2 07	(11 33)	17 42	64.2	26.2	46.5	29.5	S.	0.2	—19.5	57.9
	(21 47)	21 07	14 45	11 48	(17 53)	65.5	32.8						
5	10 15	10 00	3 35	(12 13)	18 16	78.1	24.4	50.6	29.5	S.	0.1	—17.6	58.7
	(22 43)	22 20	16 12	12 05	(18 25)	71.9	30.2						
6	11 11	10 33	4 25	(11 50)	18 10	86.2	21.2	53.1	29.4	E.	0.2	—14.6	59.5
	(23 38)	22 55	16 42	11 44	(17 59)	81.3	27.3						
7	--------	11 15	5 08	(11 37)	17 57	86.5	19.2	49.1	29.8	NE.	0.4	—10.7	60.1
	12 06	23 32	17 25	11 26	(17 47)	77.7	12.7						
8	(0 34)	11 45	5 37	(11 11)	17 31	94.1	8.2	50.7	29.4	E.	0.2	— 6.0	60.5
	13 01	--------	17 50	--------	(17 16)	--------	13.4						
9	(1 28)	0 00	6 07	10 59	17 06	90.2	12.1	50.5	29.3	E.	0.6	— 1.0	60.6
	13 55	12 15	18 28	(10 47)	(17 00)	96.6	6.8						
10	(2 22)	0 55	7 20	11 00	17 25	82.9	5.9	46.3	29.5	E.	0.7	+ 4.1	60.4
	14 48	13 20	19 25	(10 58)	(17 03)	87.7	7.2						
11	(3 15)	1 30	7 33	10 42	16 45	82.4	9.4	47.0	29.5	o	o	+ 8.9	60.1
	15 42	13 35	19 45	(10 20)	(16 30)	87.2	10.2						
12	(4 10)	2 00	8 05	10 18	16 23	81.1	12.2	47.1	29.5	E.	0.2	+13.1	59.5
	16 37	14 12	20 20	(10 02)	(16 10)	83.1	12.4						
13	(5 05)	2 25	8 30	9 48	15 53	77.9	21.1	48.7	29.4	E.	0.6	+16.5	58.9
	17 32	14 40	20 50	(9 35)	(15 45)	78.2	20.9						
14	(6 00)	3 05	9 25	9 33	15 53	72.6	30.2	48.3	29.4	E.	0.6	+18.8	58.3
	18 27	15 45	22 10	(9 45)	(16 10)	69.9	24.2						
15	(6 55)	4 38	11 05	10 11	16 38	62.8	32.2	44.6	29.7	E.	0.2	+20.0	57.6
	19 22	17 30	23 50	(10 35)	(16 55)	58.8	26.0						
16	(7 49)	6 05	--------	10 43	--------	57.0	--------	43.0	29.8	E.	0.2	+20.1	57.0
	20 16	18 30	12 20	(10 41)	16 58	55.[illegible]	32.3						
17	(8 43)	7 05	0 45	10 49	(16 56)	59.8	26.3	45.1	29.7	E.	0.2	+19.1	56.4
	21 09	20 00	13 35	(11 17)	17 19	62.0	32.8						
18	(9 34)	8 53	2 30	11 44	(17 47)	70.1	29.0	48.1	29.2	E.	0.4	+17.1	55.9
	21 59	21 20	15 10	(11 46)	18 01	67.0	29.3						
19	(10 23)	9 47	3 30	11 48	(17 56)	76.3	22.8	48.3	29.0	o	o	+14.3	55.5
	22 46	22 10	16 00	(11 47)	18 01	73.3	22.3						
20	(11 09)	10 40	4 25	11 54	(18 02)	81.5	21.3	48.0	29.1	E.	0.1	+10.9	55.1
	23 32	23 05	17 00	(11 56)	18 14	74.0	18.0						
21	(11 54)	11 13	5 10	11 41	(18 01)	80.6	13.8	44.2	29.4	E.	0.2	+ 7.2	54.7
	--------	23 28	17 20	(11 34)	17 48	72.8	10.9						
22	0 16	11 33	5 30	11 17	(17 36)	76.4	8.0	39.5	29.7	SE.	0.7	+ 3.1	54.4
	(12 37)	23 45	17 38	(11 08)	17 22	69.8	4.1						
23	0 58	--------	5 55	--------	(17 18)	--------	2.5	37.8	29.7	E.	0.4	— 1.0	54.2
	(13 20)	12 05	18 12	11 07	17 14	73.3	3.6						
24	1 41	0 20	6 30	(11 00)	(17 10)	73.4	5.3	38.2	30.0	NE.	0.2	— 5.0	54.1
	(14 02)	12 35	18 38	10 54	16 57	74.6	1.1						
25	2 23	0 40	6 45	(10 38)	(16 43)	68.1	2.3	35.7	30.1	NE.	0.3	— 8.8	54.0
	(14 45)	12 50	18 55	10 27	16 32	67.3	4.4						
26	3 06	0 58	7 05	(10 13)	(16 20)	68.8	9.5	38.2	29.9	NE.	0.6	—12.3	54.1
	(15 28)	13 12	19 25	10 06	16 19	70.0	7.6						
27	3 50	1 35	7 50	(10 07)	(16 22)	63.8	13.1	38.3	29.8	NE.	0.4	—15.3	54.4
	(16 13)	14 00	20 07	10 10	16 17	64.0	10.8						
28	4 36	2 10	8 17	(9 57)	(16 04)	66.0	21.8	43.1	29.5	E.	0.2	—17.7	54.8
	(17 00)	14 25	20 45	9 49	16 09	66.3	23.1						
Mar. 1	5 24	3 00	9 05	(10 00)	(16 05)	64.2	26.8	43.8	30.0.	NE.	0.2	—19.3	55.3
	(17 49)	15 10	21 30	9 46	16 06	60.5	24.5						
2	6 14	3 45	9 55	(9 56)	(16 06)	60.0	31.4	39.6	29.9	NE.	0.1	—20.0	56.0
	(18 40)	16 00	22 10	9 46	15 56	49.5	20.8						
3	7 06	4 25	10 45	(9 45)	(16 05)	45.6	27.4	36.4	30.1	E.	0.2	—19.7	56.9
	(19 33)	17 07	23 30	10 01	16 24	46.5	25.1						
4	8 00	6 00	--------	(10 27)	--------	50.5	--------	35.7	30.2	o	o	—18.4	57.8
	(20 27)	18 55	12 25	10 55	(16 52)	44.2	28.3						
5	8 54	8 00	1 30	(11 33)	17 30	47.2	15.0	30.5	30.7	S.	0.2	—15.9	58.7
	(21 21)	20 55	14 27	12 01	(18 00)	48.5	11.4						
6	9 49	9 55	3 25	(12 34)	18 31	59.8	9.5	34.7	30.2	S.	0.3	—12.5	59.7
	(22 17)	22 10	16 05	12 21	(18 44)	56.8	14.5						
7	10 44	10 20	4 17	(12 03)	18 28	68.3	10.5	38.5	30.0	S.	0.6	— 8.2	60.4
	(23 11)	22 25	16 23	11 41	(18 06)	72.5	8.5						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of— High water.	Time of— Low water.	Lunitidal interval of— High water.	Lunitidal interval of— Low water.	Height of— High water.	Height of— Low water.	Deduced half-tide level.	Atmospheric pressure.	Wind. Direction.	Wind. Velocity in miles per hour.	Moon's— Declination.	Moon's— Parallax.
1883.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
Mar. 8	11 38	10 40	4 35	(11 29)	17 51	76.1	6.3	38.4	30.0	S.	16.2	− 3.3	61.0
	......	22 55	16 45	11 17	(17 34)	70.8	2.3						
9	(0 06)	11 20	5 05	(11 14)	17 27	77.8	− 3.6	33.0	30.5	SE.	1.2	+ 1.9	61.2
	12 34	23 43	17 30	11 09	(17 24)	74.1	−13.7						
10	(1 02)	......	5 55	......	17 21	......	−12.1	32.8	30.2	E.	0.2	+ 6.9	61.2
	13 29	12 00	18 05	(10 58)	(17 03)	77.9	−12.3						
11	(1 58)	0 17	6 25	10 48	16 56	79.3	− 4.9	36.7	29.9	SW.	0.1	+11.5	60.8
	14 26	12 30	18 35	(10 32)	(16 37)	85.5	− 9.8						
12	(2 55)	0 40	6 48	10 14	16 22	76.7	− 7.1	37.0	29.9	NE.	0.9	+15.3	60.2
	15 23	13 00	19 05	(10 05)	(16 10)	79.6	− 2.8						
13	(3 52)	1 15	7 30	9 52	16 07	82.2	5.3	43.0	29.6	E.	1.1	+18.0	59.4
	16 20	13 40	19 48	(9 48)	(15 56)	79.1	8.7						
14	(4 49)	1 55	8 00	9 35	15 40	79.9	19.9	46.7	29.5	S.	0.6	+19.6	58.5
	17 17	14 10	20 25	(9 21)	(15 36)	75.3	18.4						
15	(5 45)	2 45	9 10	9 28	15 53	69.5	22.9	42.9	29.8	SE.	2.2	+19.9	57.7
	18 12	15 15	21 27	(9 30)	(15 42)	63.2	19.0						
16	(6 39)	3 50	10 12	9 38	16 00	57.3	26.5	40.9	30.1	NE.	1.1	+19.2	56.9
	19 06	16 22	22 40	(9 43)	(16 01)	55.6	25.4						
17	(7 31)	4 52	11 13	9 46	16 07	56.0	32.9	42.4	29.9	E.	1.6	+17.4	56.2
	19 56	17 35	......	(10 04)	......	51.6	......						
18	(8 20)	6 25	0 00	10 29	(16 29)	59.5	29.9	40.9	29.9	E.	1.4	+14.9	55.5
	20 44	19 23	12 55	(11 03)	16 59	53.9	26.4						
19	(9 07)	8 18	1 50	11 34	(17 30)	58.9	18.7	38.9	30.0	NE.	1.7	+11.7	55.0
	21 30	21 00	14 45	(11 53)	18 01	59.1	18.0						
20	(9 52)	9 25	3 15	11 55	(18 08)	68.3	20.4	41.1	30.0	E.	1.2	+ 8.1	54.6
	22 14	21 35	15 30	(11 43)	18 00	63.7	15.9						
21	(10 36)	9 55	3 42	11 41	(17 50)	68.9	13.5	42.7	29.8	E.	0.7	+ 4.1	54.3
	22 57	22 12	16 05	(11 36)	17 51	75.9	14.4						
22	(11 18)	10 30	4 20	11 33	(17 44)	74.4	18.9	43.5	29.7	S.	0.5	+ 0.1	54.1
	23 39	23 00	16 45	(11 42)	17 48	70.7	13.1						
23	(12 00)	11 15	5 10	11 36	(17 52)	68.4	7.6	36.3	30.4	SE.	5.1	− 3.9	54.0
	......	23 23	17 20	(11 23)	17 41	68.6	− 2.1						
24	0 21	11 32	5 27	11 11	(17 27)	74.1	5.4	38.9	30.2	NE.	2.2	− 7.8	54.0
	(12 43)	23 45	17 35	(11 02)	17 14	74.4	4.9						
25	1 04	11 55	5 50	10 51	(17 07)	68.6	7.7	37.4	30.4	E.	1.1	−11.3	54.0
	(13 26)	......	18 02	......	16 53	......	0.7						
26	1 47	0 10	6 15	(10 44)	(16 49)	70.1	6.2	36.4	30.4	SE.	3.2	−14.4	54.1
	(14 10)	12 20	18 25	10 33	16 38	67.7	1.9						
27	2 33	0 38	6 55	(10 28)	(16 45)	69.2	8.1	37.4	30.2	SE.	1.3	−16.9	54.4
	(14 57)	13 00	19 00	10 27	16 27	67.1	7.4						
28	3 20	1 05	7 12	(10 08)	(16 15)	68.0	11.7	37.0	30.2	SE.	0.5	−18.7	54.8
	(15 44)	13 12	19 27	9 52	16 07	61.1	8.3						
29	40 8	1 40	7 55	(9 56)	(16 11)	62.8	15.8	36.8	30.1	SE.	0.9	−19.7	55.3
	(16 34)	14 00	20 10	9 52	16 02	57.6	12.7						
30	4 59	2 20	8 30	(9 46)	(15 56)	59.8	19.6	37.0	30.2	E.	1.2	−19.7	55.9
	(17 25)	14 37	20 45	9 38	15 46	53.5	17.6						
31	5 50	2 53	9 05	(9 28)	(15 40)	54.5	25.4	38.6	30.0	E.	0.9	−18.8	56.6
	(18 17)	15 20	21 45	9 30	15 55	49.2	25.9						
Apr. 1	6 43	4 12	10 35	(9 55)	(16 18)	57.4	31.9	42.9	29.7	NE.	0.7	−16.8	57.5
	(19 09)	16 55	23 20	10 12	16 37	53.1	31.0						
2	7 35	5 48	......	(10 39)	......	58.7	......	43.0	29.6	NE.	1.0	−13.8	58.5
	(20 02)	18 48	12 15	11 13	(17 06)	52.3	32.3						
3	8 28	7 45	1 17	(11 43)	17 42	59.5	25.6	42.4	29.5	E.	0.9	−10.0	59.4
	(20 55)	20 15	14 05	11 47	(18 03)	60.8	25.5						
4	9 22	8 32	2 25	(12 37)	17 57	68.1	24.3	44.4	29.4	NE.	1.5	− 5.4	60.2
	(21 49)	20 50	14 40	11 28	(17 45)	66.3	22.3						
5	10 16	9 10	2 55	(11 21)	17 33	72.0	18.5	42.7	29.6	NE.	1.5	− 0.5	60.9
	(22 44)	21 35	15 22	11 19	(17 33)	7 .1	11.7						
6	11 11	10 05	3 45	(11 21)	17 29	76.3	10.3	42.5	29.7	E.	1.8	+ 4.6	61.3
	(23 39)	22 35	16 20	11 24	(17 36)	80.1	6.5						
7	......	10 53	4 45	(11 14)	17 34	80.0	7.5	41.0	29.9	E.	1.4	+ 9.5	61.4
	12 07	23 05	17 00	10 58	(17 21)	81.1	− 1.5						
8	(0 36)	11 25	5 15	(10 49)	17 08	78.5	− 2.0	39.7	30.0	E.	1.6	+13.7	61.1
	13 05	23 40	17 30	10 35	(16 54)	84.5	− 4.3						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1883.	h. m.	h. m.	h. m.	h. m.	h. m.	Inches.	Inches.	Inches.	Inches.			°	′
Apr. 9	(1 35)	11 58	5 50	(10 23)	16 45	82.1	4.5	43.6	29.8	E.	1.5	+16.9	60.6
	14 05	--------	18 15	--------	(16 40)	--------	3.7						
10	(2 35)	0 10	6 30	10 05	16 25	86.3	4.9	43.1	29.9	E.	1.1	+19.0	59.8
	15 04	12 30	18 50	(9 55)	(16 15)	80.3	1.7						
11	(3 33)	1 18	7 30	10 14	16 26	80.5	10.7	43.7	29.7	E.	2.0	+19.8	58.9
	16 02	13 35	19 45	(10 02)	(16 12)	74.7	12.7						
12	(4 30)	2 05	8 20	10 03	16 18	76.9	17.9	44.5	29.9	E.	0.7	+19.3	57.9
	16 58	14 20	20 35	(9 50)	(16 05)	67.5	16.7						
13	(5 25)	2 45	8 55	9 47	15 57	74.8	20.7	42.0	30.0	E.	1.2	+17.8	57.0
	17 51	15 00	21 05	(9 35)	(15 40)	56.7	22.0						
14	(6 16)	3 26	9 44	9 35	15 53	58.9	25.5	38.6	30.1	E.	1.5	+15.5	56.2
	18 41	16 02	22 12	(9 46)	(15 56)	49.3	24.5						
15	(7 05)	4 50	11 10	10 09	16 29	49.7	24.5	36.1	30.3	NE.	1.1	+12.4	55.5
	19 28	17 27	23 40	(10 22)	(16 35)	44.9	25.0						
16	(7 51)	6 17	--------	10 49	--------	50.1	--------	36.8	30.3	E.	1.3	+ 8.9	54.9
	20 13	19 15	12 50	(11 24)	17 22	48.2	24.3						
17	(8 35)	8 10	1 50	11 57	(17 59)	54.5	23.5	37.7	30.2	E.	1.4	+ 5.0	54.5
	20 56	20 25	14 18	(11 50)	18 05	53.9	20.3						
18	(9 17)	9 00	2 45	12 04	(18 10)	59.2	23.2	40.3	30.1	E.	1.6	+ 1.1	54.2
	21 38	21 20	15 10	(12 03)	18 14	61.5	20.0						
19	(9 59)	9 35	3 27	11 57	(18 10)	62.7	22.0	42.4	30.1	NE.	1.3	— 3.0	54.0
	22 20	22 00	15 45	(12 01)	18 07	67.4	18.1						
20	(10 41)	10 25	4 15	12 05	(18 16)	70.8	22.5	43.3	29.9	S.	1.0	— 6.8	54.0
	23 02	22 35	16 30	(11 54)	18 10	72.5	11.3						
21	(11 24)	10 40	4 38	11 38	(17 57)	71.9	14.1	41.6	30.0	S.	0.4	—10.5	54.0
	23 46	22 45	16 40	(11 21)	17 38	74.9	7.5						
22	--------	10 55	4 50	11 09	(17 26)	69.5	10.2	38.2	30.4	S.	1.3	—13.7	54.1
	(12 08)	23 10	17 05	(11 02)	17 19	72.0	1.3						
23	0 30	11 30	5 20	11 00	(17 12)	66.3	5.6	35.7	30.7	E.	0.5	—16.3	54.3
	(12 54)	23 55	17 40	(11 01)	17 10	71.3	— 1.1						
24	1 17	--------	6 05	--------	(17 11)	--------	6.5	36.0	30.5	E.	0.6	—18.3	54.6
	(13 42)	12 10	18 12	10 53	16 55	65.3	0.7						
25	2 06	0 17	6 25	(10 35)	(16 43)	71.2	9.1	37.5	30.4	E.	0.8	—19.5	55.0
	(14 31)	12 25	18 32	10 19	16 26	66.0	5.1						
26	2 55	0 40	6 50	(10 09)	(16 19)	71.8	12.0	39.7	30.3	E.	0.7	—19.7	55.5
	(15 21)	12 25	18 55	10 00	16 00	64.8	11.1						
27	3 46	1 05	7 20	(9 44)	(15 59)	72.6	20.5	42.3	30.2	NE.	1.6	—19.0	56.0
	(16 12)	13 35	19 46	9 49	16 00	64.2	15.6						
28	4 37	1 55	8 05	(9 43)	(15 53)	67.3	19.7	39.7	30.4	E.	0.8	—17.3	56.7
	(17 03)	14 08	20 15	9 31	15 38	57.5	16.5						
29	5 29	2 35	9 05	(9 32)	(16 02)	60.3	20.3	36.2	30.6	E.	1.0	—14.7	57.4
	(17 55)	15 20	21 37	9 51	16 08	49.8	15.2						
30	6 20	3 55	10 05	(10 00)	(16 10)	54.0	20.1	35.9	30.5	E.	0.2	—11.2	58.2
	(18 46)	16 22	22 48	10 02	16 28	48.1	22.0						
May 1	7 11	5 15	11 38	(10 29)	(16 52)	56.9	23.8	39.6	30.1	E.	0.1	— 7.1	59.0
	(19 37)	18 00	--------	10 49	--------	54.5	--------						
2	8 03	6 40	0 20	(11 03)	17 09	62.9	24.5	40.8	30.0	NE.	1.3	— 2.[illegible]	59.8
	(20 29)	19 20	13 03	11 17	(17 26)	58.5	21.0						
3	8 55	7 47	1 35	(11 18)	17 32	62.5	17.7	38.4	30.1	E.	3.7	+ 2.5	60.4
	(21 23)	20 30	14 10	11 35	(17 41)	64.8	10.9						
4	9 50	8 52	2 45	(11 29)	17 50	65.7	12.9	3[illegible].2	30.2	E.	1.9	+ 7.4	60.9
	(22 18)	21 10	15 03	11 20	(17 40)	69.9	3.9						
5	10 46	9 25	3 15	(11 07)	17 25	70.3	4.5	36.9	30.2	E.	1.3	+11.9	61.1
	(23 16)	22 05	15 45	11 19	(17 27)	77.3	— 2.0						
6	11 45	10 20	4 15	(11 04)	17 29	72.5	2.1	36.1	30.4	E.	1.3	+15.6	61.0
	--------	22 45	16 28	11 00	(17 12)	77.8	— 6.0						
7	(0 15)	11 10	5 07	(10 55)	17 22	71.9	— 3.7	34.2	30.6	E.	1.2	+18.2	60.5
	12 45	23 28	17 13	10 43	(16 58)	79.2	—10.4						
8	(1 15)	11 48	5 37	(10 33)	16 52	71.6	— 4.6	34.0	30.7	NE.	1.0	+19.6	59.9
	13 45	--------	17 56	--------	(16 41)	--------	— 9.6						
9	(2 15)	0 20	6 32	10 35	16 47	77.1	— 2.7	34.2	30.5	NE.	1.7	+19.6	59.0
	14 44	12 36	18 40	(10 21)	(16 25)	68.2	— 4.7						
10	(3 13)	0 55	7 10	10 11	16 26	76.2	2.8	36.5	30.4	NE.	1.2	+18.5	58.1
	15 41	13 18	19 22	(10 05)	(16 09)	67.9	2.1						

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1883.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
May 11	(4 07)	1 30	7 48	9 49	16 07	72.1	7.5	37.8	30.2	NE.	0.9	+16.3	57.2
	16 33	13 54	20 04	(9 47)	(15 57)	63.5	11.0						
12	(4 58)	2 15	8 23	9 42	15 50	68.5	15.9	40.4	30.1	NE.	0.6	+13.4	56.3
	17 23	14 47	20 53	(9 49)	(15 55)	60.3	19.3						
13	(5 44)	3 15	9 32	9 52	16 09	66.3	25.6	44.1	29.8	E.	3.6	+ 9.9	55.6
	18 09	15 38	21 48	(9 54)	(16 04)	61.6	30.7						
14	(6 31)	4 00	10 08	9 51	15 59	57.0	27.7	42.1	29.9	NE.	12.0	+ 6.1	55.0
	18 53	16 29	23 03	(9 58)	(16 32)	53.6	27.5						
15	(7 15)	5 22	11 47	10 29	16 54	58.4	25.5	42.2	29.9	NW.	2.0	+ 2.1	54.5
	19 36	18 29	---------	(11 14)	---------	56.0	---------						
16	(7 57)	7 28	0 57	11 52	(17 42)	60.3	30.2	42.7	29.8	NE.	1.6	— 1.9	54.2
	20 18	19 39	13 34	(11 42)	17 58	58.8	23.5						
17	(8 39)	8 04	1 47	11 46	(17 50)	59.7	27.0	40.5	30.1	NE.	1.7	— 5.8	54.1
	21 00	20 21	14 08	(11 42)	17 50	60.5	19.1						
18	(9 22)	8 42	*2 21	11 42	(17 42)	59.2	*15.5	38.2	30.3	E.	0.5	— 9.5	54.1
	21 43	21 12	14 45	(11 50)	17 45	63.1	14.3						
19	(10 05)	9 25	3 28	11 42	(18 06)	61.7	17.9	40.2	30.1	SW.	0.1	—12.9	54.2
	22 27	21 47	15 28	(11 42)	17 45	69.9	12.4						
20	(10 51)	10 02	3 57	11 35	(17 52)	66.6	19.2	44.5	29.9	E.	0.7	—15.7	54.4
	23 14	22 31	16 04	(11 40)	17 37	79.0	14.2						
21	(11 38)	10 46	4 32	11 32	(17 41)	75.1	22.9	47.7	29.7	SE.	1.5	—17.9	54.7
	---------	22 55	16 43	(11 17)	17 29	80.5	14.6						
22	0 02	11 03	5 05	11 01	(17 27)	75.1	18.5	47.7	29.6	E.	0.6	—19.3	55.1
	(12 27)	23 22	17 04	(10 55)	17 02	83.6	13.6						
23	0 52	11 46	5 30	10 54	(17 03)	76.4	20.7	48.4	29.6	E.	0.5	—19.8	55.5
	(13 18)	23 54	17 46	(10 36)	16 54	83.8	14.0						
24	1 43	---------	6 11	---------	(16 53)	---------	18.5	46.7	29.8	SE.	2.8	—19.3	56.0
	(14 09)	12 13	18 15	10 30	16 32	72.1	13.8						
25	2 34	0 34	6 47	(10 25)	(16 38)	80.8	19.3	46.7	29.8	E.	1.5	—17.8	56.5
	(15 00)	12 53	18 56	10 19	16 22	72.7	15.4						
26	3 26	1 06	7 27	(10 06)	(16 27)	79.1	21.4	47.1	29.8	SW.	0.7	—15.4	57.0
	(15 52)	13 25	19 25	9 59	15 59	70.9	18.2						
27	4 17	1 46	8 03	(9 54)	(16 11)	77.5	23.5	47.7	29.8	NE.	9.8	—12.2	57.6
	(16 42)	14 03	19 57	9 46	15 40	68.4	23.2						
28	5 07	2 33	9 02	(9 51)	(16 20)	75.3	26.8	48.8	29.7	N.	2.3	— 8.2	58.2
	(17 32)	15 04	21 08	9 57	16 01	68.1	27.5						
29	5 57	3 15	9 22	(9 43)	(15 50)	72.2	29.0	49.1	29.6	N.	0.6	— 3.8	58.8
	(18 23)	15 39	22 21	9 42	16 24	63.6	32.3						
30	6 48	4 52	11 02	(10 29)	(16 39)	73.2	28.2	49.1	29.5	S.	12.0	+ 0.9	59.3
	(19 14)	17 33	23 38	10 45	16 50	64.9	32.2						
31	7 40	5 53	---------	(10 39)	---------	69.4	---------	47.0	29.7	S.	14.3	+ 5.7	59.8
	(20 07)	[1]18 01	12 10	10 21	(16 56)	64.5	25.3						
June 1	8 33	7 17	1 10	(11 10)	17 30	61.1	27.9	44.5	29.7	S.	11.3	+10.2	60.2
	(21 01)	20 02	13 50	11 29	(17 43)	70.4	20.0						
2	9 29	8 30	2 15	(11 29)	17 42	72.7	24.8	48.0	29.6	NW.	0.8	+14.2	60.3
	(21 58)	20 50	14 34	11 21	(17 33)	78.6	19.1						
3	10 27	9 10	3 00	(11 12)	17 31	75.7	23.5	49.6	29.5	W.	0.2	+17.2	60.3
	(22 57)	21 40	15 20	11 13	(17 22)	85.0	17.2						
4	11 27	9 47	3 45	(10 50)	17 18	78.2	21.2	50.3	29.6	W.	0.1	+19.2	60.0
	(23 57)	22 20	16 02	10 53	(17 05)	88.4	14.4						
5	---------	10 42	4 34	(10 45)	17 07	79.6	19.9	50.6	29.7	W.	1.1	+19.8	59.5
	12 27	23 09	16 49	10 42	(16 52)	90.6	13.6						
6	(0 56)	11 28	5 27	(10 32)	17 00	81.4	18.4	51.5	29.7	SW.	1.1	+19.2	58.8
	13 25	---------	17 43	---------	(16 47)	---------	15.2						
7	(1 52)	0 03	6 05	10 38	16 40	91.7	20.4	52.1	29.6	S.	16.9	+17.4	58.0
	14 21	12 09	18 17	(10 17)	(16 25)	81.6	16.4						
8	(2 47)	0 38	6 57	10 17	16 36	88.4	21.2	51.7	29.6	S.	4.5	+14.7	57.2
	15 13	13 07	19 09	(10 20)	(16 22)	78.7	20.7						
9	(3 38)	1 17	7 24	10 04	16 11	85.4	24.6	52.5	29.5	N.	2.6	+11.3	56.3
	16 02	13 44	19 51	(10 06)	(16 13)	76.6	26.5						
10	(4 25)	2 09	8 27	10 07	16 25	82.1	26.7	51.5	29.6	SW.	2.9	+ 7.5	55.6
	16 48	14 36	20 35	(10 11)	(16 10)	71.7	28.3						
11	(5 10)	2 46	9 08	9 58	16 20	74.1	27.0	48.8	29.8	SW.	3.2	+ 3.5	55.0
	17 32	15 14	21 14	(10 04)	(16 04)	65.2	30.9						

[1] Seems to have been $19^h\ 01^m$ in original. An imperfect or erroneous figure in the transcript led to the adoption of $18^h\ 01^m$.

TABLE V.—*Observed times and heights of high and low water, computed lunitidal intervals, etc.*—Continued.

Date.	Moon's upper and lower transit.	Time of—		Lunitidal interval of—		Height of—		Deduced half-tide level.	Atmospheric pressure.	Wind.		Moon's—	
		High water.	Low water.	High water.	Low water.	High water.	Low water.			Direction.	Velocity in miles per hour.	Declination.	Parallax.
1883.	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*h. m.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*			°	′
June 12	(5 53)	3 29	9 54	9 57	16 22	68.4	28.6	46.1	29.9	SW.	2.3	— 0.5	54.6
	18 14	16 05	22 05	(10 12)	(16 12)	60.9	27.7						
13	(6 35)	4 09	10 32	9 55	16 18	60.5	27.8	43.3	30.1	S.	7.6	— 4.5	54.3
	18 56	16 48	23 00	(10 13)	(16 25)	54.6	32.4						
14	(7 18)	5 31	--------	10 35	--------	57.4	--------	44.1	30.1	E.	4.9	— 8.3	54.2
	19 39	18 27	12 04	(11 09)	17 08	58.4	27.5						
15	(8 01)	7 02	0 47	11 23	(17 29)	58.6	34.6	45.7	30.0	W.	2.1	—11.8	54.2
	20 23	19 35	13 13	(11 34)	17 34	62.6	27.6						
16	(8 46)	7 50	1 48	11 27	(17 47)	65.6	34.4	48.6	29.8	S.	2.6	—14.8	54.4
	21 08	20 20	14 04	(11 34)	17 41	67.5	29.9						
17	(9 32)	8 41	2 35	11 33	(17 49)	63.3	32.9	47.9	30.0	W.	0.9	—17.3	54.8
	21 56	21 31	14 54	(11 59)	17 46	71.5	25.3						
18	(10 21)	10 01	3 49	12 05	(18 17)	67.9	30.1	48.6	30.0	NE.	8.9	—18.9	55.2
	22 45	22 06	15 59	(11 45)	18 03	74.7	23.8						
19	(11 11)	10 18	4 12	11 33	(17 51)	68.4	27.7	48.6	30.0	SW.	1.7	—19.8	55.6
	23 37	22 34	16 27	(11 23)	17 42	78.2	21.5						
20	--------	10 47	4 41	11 10	(17 30)	71.1	25.7	49.3	29.9	W.	1.2	—19.6	56.2
	(12 03)	*23 53	17 53	(11 50)	18 16	76.9	23.5						
21	0 29	11 59	5 54	11 30	(17 51)	70.8	25.1	48.4	30.0	SW.	1.3	—18.4	56.7
	(12 55)	--------	*18 00	--------	17 31	--------	17.6						
22	1 21	0 04	6 04	(11 09)	(17 09)	82.0	23.0	48.8	30.1	SW.	1.9	—16.2	57.2
	(13 47)	12 06	18 08	10 45	16 47	73.6	17.3						
23	2 13	0 14	6 30	(10 27)	(16 43)	81.6	21.4	49.9	30.1	NE.	2.8	—13.1	57.7
	(14 39)	12 35	18 31	10 22	16 18	75.7	23.7						
24	3 05	0 48	7 04	(10 09)	(16 25)	84.0	25.3	51.7	29.7	N.	13.1	— 9.3	58.1
	(15 30)	13 10	19 10	10 05	16 05	76.3	21.4						
25	3 55	1 32	7 36	(10 02)	(16 06)	82.2	24.4	50.3	29.8	W.	4.8	— 5.0	58.5
	(16 20)	13 57	20 03	10 02	16 08	72.3	23.6						
26	4 45	2 14	8 26	(9 54)	(16 06)	79.0	24.5	49.5	29.9	E.	3.9	— 0.3	58.9
	(17 11)	14 37	20 58	9 52	16 13	69.4	27.5						
27	5 36	3 11	9 22	(10 00)	(16 11)	74.4	25.6	47.8	30.0	S.	0.7	+ 4.4	59.2
	(18 02)	15 28	21 40	9 52	16 04	64.6	28.6						
28	6 28	3 52	10 11	(9 50)	(16 09)	68.4	26.6	47.5	29.9	NE.	3.3	+ 8.9	59.4
	(18 55)	16 30	22 52	10 02	16 24	63.8	33.3						
29	7 21	5 15	11 24	(10 20)	(16 29)	66.6	27.4	47.6	29.8	NE.	9.1	+13.0	59.5
	(19 49)	18 05	--------	10 44	--------	64.2	--------						
30	8 16	6 20	0 15	(10 31)	16 54	63.9	32.4	47.3	29.9	SW.	2.4	+16.3	59.5
	(20 45)	19 23	12 31	11 07	(16 42)	67.9	26.3						
July 1	9 14	7 42	1 32	(10 57)	17 16	67.9	31.3	--------	29.9	SW.	2.4	+18.6	59.5

On proceeding to compute the lunitidal intervals, or the intervals of mean solar time by which the moon's transit, either superior or inferior, precedes the time of high and low water, it was deemed best, although a preliminary investigation indicated the "age of the tide" to be in excess of a whole day, to refer the tide to the last lunar transit that would render the time of high water, less the time of transit, invariably a positive quantity; and, in conformity with universal usage, to take the interval for low water next greater than for high. The times of lunar transit in Washington mean time for the meridian of Washington were read out of the Ephemeris and entered in column 2 of Table V, the lower transits being distinguished by parentheses, and then columns 5 and 6 formed by taking each transit from the next following high water and the succeeding low water, and writing the remainders in the appropriate column opposite to the corresponding subtrahend, as may readily be made out from the table itself. The intervals derived from lower transits were inclosed in parentheses.

It appears from an inspection of Table V that the lunitidal intervals and heights are all fluctuating quantities, the range of interval being $3^h\ 54^m$ and $5^h\ 10^m$, the range of height 55.6 inches and 62.4 inches for high and low water, respectively. A cursory examination having shown that phase is the most potent factor in this fluctuation, it was decided to make it the basis of the principal classification in that search for mean values into which all quantitative study of tidal phenomena resolves itself. For this purpose both lunitidal intervals and heights were distributed into groups according to that hour of moon's transit in column 2, to which they relate, distinguishing between high and low water and upper and lower transit, and taking the heights to the nearest whole inch. It is hardly worth while to burden these pages with this mass of figures. A specimen of the arrangement will suffice. No observation was rejected.

Example of the arrangement of lunitidal intervals and heights according to mean solar hour of moon's transit

[For high waters following lower transit.]

Moon's transit.	Lunitidal interval.	Height.	Moon's transit.	Lunitidal interval.	Height.	Moon's transit.	Lunitidal interval.	Height.
h. m.	*h. m.*		*h. m.*	*h. m.*		*h. m.*	*h. m.*	
6 37	11 30	62	7 36	11 31	57	8 35	11 32	63
6 26	9 49	70	7 22	10 48	67	8 17	11 18	69
6 12	9 55	67	7 04	10 46	65	8 46	10 59	69
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
6 35	10 13	65	7 18	11 09	68	8 46	11 34	77
6 27.6	10 04.0	59.7	7 28.6	10 48.9	57.9	8 30.0	11 21.5	62.6

The means of each column—hour of moon's transit, lunitidal interval, and height—were now taken for each of the ninety-six groups and the results brought together in Table VI for comparison and further treatment. It appears upon inspection of this table that the results accord well with what theory would lead us to expect, that is, the period is half a synodic month, and there is substantial agreement between upper and lower transit values. Besides this confirmation of theory, the distribution into ninety-six instead of twenty-four groups afforded a check against gross errors in computation.

TABLE VI.—*Mean lunitidal interval and height for high and low water, upper and lower transit of the moon, for every mean solar hour of the moon's transit.*

High water.								Low water.							
Upper transit.				Lower transit.				Upper transit.				Lower transit.			
h. m.	*h. m.*	*Inches.*		*h. m.*	*h. m.*	*Inches.*		*h. m.*	*h. m.*	*Inches.*		*h. m.*	*h. m.*	*Inches.*	
0 30	11 02	78.3	29	0 31	11 00	81.5	27	0 30	17 08	8.1	29	0 31	17 07	10.6	27
1 30	10 40	78.0	26	1 30	10 37	82.5	25	1 30	16 47	8.6	26	1 30	16 45	7.8	25
2 30	10 21	76.5	29	2 30	10 19	79.1	28	2 30	16 25	11.0	29	2 30	16 23	11.3	28
3 30	10 03	73.3	27	3 31	10 02	76.2	26	3 30	16 13	15.8	27	3 31	16 09	14.5	26
4 30	9 51	67.3	29	4 30	9 49	69.7	26	4 30	16 02	20.5	29	4 29	15 56	19.4	26
5 31	9 52	62.5	29	5 28	9 46	65.0	28	5 31	16 07	25.3	29	5 28	15 59	25.0	28
6 31	10 09	57.7	26	6 28	10 04	59.7	26	6 31	16 34	28.1	26	6 28	16 19	29.2	26
7 28	10 57	58.7	28	7 29	10 49	57.9	30	7 28	17 20	27.5	28	7 29	17 10	28.4	30
8 29	11 30	61.0	28	8 30	11 21	62.6	27	8 28	17 48	24.2	29	8 30	17 41	24.6	27
9 32	11 40	69.1	30	9 30	11 34	67.3	28	9 32	17 49	19.3	30	9 30	17 49	18.5	28
10 30	11 33	74.4	23	10 30	11 30	73.7	27	10 30	17 41	13.9	23	10 30	17 43	14.3	27
11 29	11 21	77.8	29	11 29	11 17	76.0	27	11 29	17 29	11.2	29	11 29	17 24	10.6	27
12 29	11 03	80.0	24	12 28	10 59	77.7	27	12 29	17 15	8.2	24	12 28	17 07	8.5	27
13 29	10 39	81.0	28	13 30	10 41	78.0	29	13 29	16 48	8.4	28	13 30	16 48	8.4	29
14 30	10 19	78.7	27	14 30	10 16	76.3	27	14 30	16 25	8.6	27	14 30	16 28	10.6	27
15 29	10 02	74.7	26	15 30	10 03	72.8	28	15 29	16 09	13.4	26	15 30	16 13	16.3	28
16 29	9 50	70.7	27	16 27	9 55	68.3	26	16 29	15 59	19.3	27	16 27	16 06	21.1	26
17 29	9 43	62.5	27	17 28	9 46	62.2	30	17 29	15 55	24.6	27	17 28	15 58	26.5	30
18 31	10 03	58.6	30	18 29	10 06	58.2	28	18 30	16 24	28.5	30	18 29	16 25	29.6	28
19 31	10 49	59.0	25	19 29	10 52	58.9	27	19 30	17 10	29.0	25	19 29	17 14	29.4	27
20 30	11 27	62.6	29	20 29	11 41	62.4	30	20 29	17 41	24.7	29	20 29	17 56	25.7	29
21 30	11 35	67.6	27	21 30	11 42	68.0	27	21 30	17 55	18.7	27	21 30	17 54	20.0	27
22 31	11 33	73.7	29	22 32	11 35	74.3	29	22 31	17 43	14.0	29	22 32	17 42	16.0	29
23 30	11 17	77.7	25	23 32	11 19	78.2	25	23 30	17 25	9.0	25	23 32	17 26	11.8	25

Adding lower to upper transit values, then superposing the last half of the synodic month upon the first, adding, dividing by 4, and then adding to the intervals the following corrections, viz, $+49.3^{m}$ for difference of time between Fort Conger and Washington, $+1.7^{m}$ for mean motion of moon in right ascension while passing from the meridian of Fort Conger to the meridian of Washington, and -0.6^{m} for delay the first year in reading the gauge when high or low water fell between -5^{m}

and $+7^m$ of the even hour, or a total correction of $+50.4^m$, we finally obtain Table VII. It is free from diurnal inequality and every declination effect depending upon odd powers of the moon's declination; but all its lunitidal intervals and heights are affected by parallax and by declination effects depending upon the even powers of the declination. Table VII is represented graphically by figures 2 and 3, Plate II. The regular course of the hourly values, which all fall in the figure upon a tolerably smooth and regular curve, is a proof of the reliability of the determination.

TABLE VII.—*Mean lunitidal interval and height of high and low water for every hour of the moon's transit for half a synodic month, reckoning from either syzygy.*

High water, upper and lower transit.				Low water, upper and lower transit.			
Hour of moon's transit.	Lunitidal interval.	Height.	Number of observations.	Hour of moon's transit.	Lunitidal interval.	Height.	Number of observations.
h. m.	*h. m.*	*Inches.*		*h. m.*	*h. m.*	*Inches.*	
0 27.8	11 51.3	79.4	107	0 27.8	17 59.5	8.9	107
1 27.9	11 29.8	79.9	108	1 27.9	17 37.5	8.3	108
2 28.5	11 09.1	77.7	111	2 28.5	17 15.7	10.4	111
3 28.3	10 52.8	74.3	107	3 28.3	17 01.5	15.0	107
4 27.3	10 41.5	69.0	108	4 27.3	16 51.2	20.1	108
5 27.4	10 37.1	63.1	114	5 27.4	16 50.3	25.3	114
6 27.8	10 55.9	58.5	110	6 27.8	17 15.9	28.9	110
7 27.1	11 42.3	58.6	110	7 27.3	18 03.9	28.6	110
8 27.7	12 20.4	62.1	114	8 27.2	18 37.0	24.8	114
9 28.7	12 28.0	68.0	112	9 28.7	18 42.0	19.1	112
10 29.2	12 23.1	74.0	108	10 29.2	18 32.5	14.5	108
11 28.5	12 08.8	77.4	106	11 28.5	18 16.4	10.7	106
28.0	11 33.3	70.2	1,315	28.0	17 45.3	17.9	1,315

THE SEMI-MENSUAL INEQUALITY.

If the means for the synodic half month be taken from the individual values corresponding to the several hours of moon's transit there results the semi-mensual inequality exhibited in Table VIII.

TABLE VIII.—*The semi-mensual inequality.*

For high water.				For low water.			
Moon's transit.	Inequality in time.	Inequality in height.	Number of observations.	Moon's transit.	Inequality in time.	Inequality in height.	Number of observations.
h. m.	*m.*	*Inches.*		*h. m.*	*m.*	*Inches.*	
0 27.8	+18.0	+ 9.2	107	0 27.8	+14.2	− 9.0	107
1 27.9	− 3.5	+ 9.7	108	1 27.9	− 7.8	− 9.6	108
2 28.5	−24.2	+ 7.5	111	2 28.5	−29.6	− 7.5	111
3 28.3	−40.5	+ 4.1	107	3 28.3	−43.8	− 2.9	107
4 27.3	−51.8	− 1.2	108	4 27.3	−54.1	+ 2.2	108
5 27.4	−56.2	− 7.1	114	5 27.4	−55.0	+ 7.4	114
6 27.8	−37.4	−11.7	110	6 27.8	−29.4	+11.0	110
7 27.1	+ 9.0	−11.6	110	7 27.3	+18.6	+10.7	110
8 27.7	+47.1	− 8.1	114	8 27.2	+51.7	+ 6.9	114
9 28.7	+54.7	− 2.2	112	9 28.7	+56.7	+ 1.2	112
10 29.2	+49.8	+ 3.8	108	10 29.2	+47.2	− 3.4	108
11 28.5	+35.5	+ 7.2	106	11 28.5	+31.1	− 7.2	106

This inequality is very faithfully represented by the following periodical functions:

For high water:

Inequality in time, in minutes, $=35.2 \cos \varphi - 41.7 \sin \varphi - 11.1 \cos 2\varphi + 2.1 \sin 2\varphi + 4.0 \cos 3\varphi + 1.9 \sin 3\varphi - 0.8 \cos 4\varphi - 1.1 \sin 4\varphi$

Inequality in height, in inches, $= 9.2 \cos \varphi + 5.7 \sin \varphi - 0.5 \cos 2\varphi - 1.2 \sin 2\varphi + 0.1 \sin 3\varphi - 0.2 \cos 4\varphi$

For low water:

Inequality in time, in minutes, $=30.5 \cos \varphi - 46.1 \sin \varphi - 10.7 \cos 2\varphi + 4.4 \sin 2\varphi + 4.2 \cos 3\varphi + 1.4 \sin 3\varphi - 1.0 \cos 4\varphi - 0.1 \sin 4\varphi$

Inequality in height, in inches, $=- 9.1 \cos \varphi - 4.9 \sin \varphi + 0.6 \cos 2\varphi + 0.6 \sin 2\varphi + 0.2 \cos 3\varphi - 0.2 \sin 3\varphi + 0.1 \sin 4\varphi$

φ is reckoned from the syzygies, one hour of phase equal to thirty degrees of arc. The computed are compared with the observed values in the following table:

TABLE IX.—*Computed compared with observed semi-mensual inequality.*

Hour of moon's transit.	High water.		Low water.	
	Inequality in time. $o-c$	Inequality in height. $o-c$	Inequality in time. $o-c$	Inequality in height. $o-c$
h. m.	*m.*	*Inch.*	*m.*	*Inch.*
0 30	+0.5	−0.1	+0.4	+0.2
1 30	−0.3	+0.1	−0.2	0.0
2 30	−0.1	0.0	−0.1	−0.1
3 30	+0.2	+0.1	+0.2	−0.1
4 30	−0.3	−0.2	−0.5	−0.2
5 30	+0.2	+0.2	+0.2	0.0
6 30	−0.1	−0.1	−0.2	0.0
7 30	0.0	0.0	+0.2	−0.1
8 30	+0.6	0.0	0.0	+0.1
9 30	−0.4	−0.1	−0.2	−0.2
10 30	+0.9	0.0	+0.4	+0.2
11 30	−0.7	−0.2	−0.4	−0.1

A less exact expression for the semi-mensual inequality, but one more interesting, on account of its brevity and the signification of its two parameters, is furnished by the wave theory.

Put $\varphi =$ the mean solar time of moon's transit.
$\theta =$ the lunitidal interval.
$\lambda =$ the mean lunitidal interval.
$\alpha =$ the retardation or "age of the tide."
$H, h =$ the height of the lunar and solar tides, respectively.
$R, r =$ the maximum and minimum ranges of the tide.
$Y, y =$ the height of high and low water, respectively.

Then for the semi-mensual time inequality, or $\theta-\lambda$ in the preceding notation, we have by the equilibrium theory

$$\tan 2(\theta-\lambda) = -\frac{h \sin 2\varphi}{H + h \cos 2\varphi}$$

and then by the wave theory, introducing the retardation,

$$\tan 2(\theta-\lambda) = -\frac{h \sin 2(\varphi-\alpha)}{H + h \cos 2(\varphi-\alpha)}$$

or, finally, putting $\frac{h}{H}=k$

$$\tan 2(\theta-\lambda) = -\frac{k \sin 2(\varphi-\alpha)}{1 + k \cos 2(\varphi-\alpha)}$$

By a graphical process we find that for high water the mean interval occurs at $1^h\ 19.7^m$ and $7^h\ 18.7^m$, hence $\alpha = 1^h\ 19.2^m = 19^\circ\ 48'$; for low water the mean interval occurs at $1^h\ 08.3^m$ and $7^h\ 06.2^m$, hence $\alpha = 1^h\ 07.3^m = 16^\circ\ 49.5'$; for high water the maximum range in the interval is $1^h\ 51.5^m = 27^\circ\ 52.5'$, its sine $[9.6698] = k$; for low water the maximum range in the interval is $1^h\ 55.0^m = 28^\circ\ 45.0'$, its sine $[9.6821] = k$, and therefore for high water

$$\tan 2(\theta - \lambda) = -\frac{[9.6698] \sin 2(\varphi - 19^\circ\ 48')}{1 + [9.6698] \cos 2(\varphi - 19^\circ\ 48')}$$

and for low water

$$\tan 2(\theta - \lambda) = -\frac{[9.6821] \sin 2(\varphi - 16^\circ\ 49.5')}{1 + [9.6821] \cos 2(\varphi - 16^\circ\ 49.5')}$$

By the equilibrium theory the height of the tide is expressed by the formula

$$y = \sqrt{H^2 + h^2 + 2Hh \cos 2\varphi}$$

and hence by the wave theory, introducing the tidal retardation α,

$$y = \sqrt{H^2 + h^2 + 2Hh \cos 2(\varphi - \alpha)}$$

We also have

$$R = 2(H + h) \qquad r = 2(H - h)$$

whence

$$H = \tfrac{1}{4}(R + r) \qquad h = \tfrac{1}{4}(R - r)$$

From Fig. 3, Plate II, we have, with all the precision requisite in the application of this method, $R = 72.1$ inches, $r = 28.4$ inches, hence $H = 25.1$ inches, $h = 10.9$ inches. We also see from the same curves that highest high water lags behind the syzygies $1^h\ 14^m$, lowest high water behind the quadratures 57^m, lowest low water behind the syzygies $1^h\ 12^m$, highest low water behind the quadratures 55.5^m, hence for high water

$$\alpha = \tfrac{1}{2}(1^h\ 14^m + 57^m) = 1^h\ 05.5^m = 16^\circ\ 22.5'$$

and for low water

$$\alpha = \tfrac{1}{2}(1^h\ 12^m + 55.5^m) = 1^h\ 03.7^m = 15^\circ\ 55.5'$$

The formula for the height thereby becomes:

For high water

$$Y = \sqrt{(25.1)^2 + (10.9)^2 + 2 \times 25.1 \times 10.9 \cos 2(\varphi - 16^\circ\ 22.5')}$$

For low water

$$y = -\sqrt{(25.1)^2 + (10.9)^2 + 2 \times 25.1 \times 10.9 \cos 2(\varphi - 15^\circ\ 55.5')}$$

The intervals and heights have been computed from these formulæ, and the semi-mensual inequality obtained has been compared with the observed value and the result stated in Table X:

TABLE X.—*Computed and compared with observed semi-mensual inequality.*

Hour of moon's transit.	High water.		Low water.	
	Inequality in time. *o—c*	Inequality in height. *o—c*	Inequality in time. *o—c*	Inequality in height. *o—c*
h. m.	*m.*	*Inches.*	*m.*	*Inches.*
0 30	+ 2.3	− 0.1	+ 2.0	+ 0.4
1 30	− 0.2	+ 0.2	− 0.2	− 0.1
2 30	− 1.9	− 0.2	− 3.3	+ 0.1
3 30	− 1.3	+ 0.1	− 0.7	+ 0.9
4 30	0.0	0.0	+ 0.8	+ 0.9
5 30	− 0.9	− 0.2	+ 0.9	+ 0.5
6 30	+ 0.3	− 0.5	+ 2.5	− 0.3
7 30	+ 0.6	+ 0.1	− 1.1	− 0.9
8 30	+ 0.1	− 0.3	− 0.9	− 0.7
9 30	− 0.9	0.0	+ 0.1	− 0.8
10 30	+ 1.9	+ 0.7	+ 0.8	− 0.2
11 30	+ 2.2	+ 0.1	+ 0.5	0.0

For the tide-producing power of the sun, measured by that of the moon as unit, we have three values, 0.468 from the range of the high-water interval, 0.481 from the range of the low-water interval, and 0.434 from the range of the tide. Their mean is 0.461 and its reciprocal 2.17.

For α, the interval by which the maximum and minimum effects follow the maximum and minimum of the tidal forces, we have four values, viz, 79.2^m, 67.3^m, 65.5^m, and 63.7^m, derived from the high-water intervals, the low-water intervals, the high-water heights, and the low-water heights, respectively. The mean is $\alpha = 68.9^m$, and dividing this by 48.8^m, the moon's mean retard on the sun in a mean solar day, we have

$$1.41^d = 1^d\ 09.8^h$$

for the "age of the tide" at Fort Conger.

EFFECT OF CHANGES IN THE LUNAR PARALLAX UPON THE SEMI-MENSUAL INEQUALITY.

To determine the effect upon the semi-mensual inequality of a variation in the lunar parallax, the lunitidal intervals and heights were distributed into groups according to the double argument, parallax and phase. The lunar parallax for noon of each day having been entered in the last column of Table V, all intervals and heights corresponding to a parallax of 57.0′ or less were taken out and distributed into twelve groups, according to hour of moon's transit; all intervals and heights corresponding to a parallax of 57.1′, or greater, in like manner into twelve other groups. The means for each of these groups are brought together in Tables XI and XII, and for comparison the semi-mensual inequality from Table VII. In making this distribution the intervals and heights were referred, not to the parallax of the same day, but to that of the preceding day, the effect at this station following the cause by an interval considerably in excess of a day, as appears from the several values for α brought out by the preceding investigation.

TABLE XI.—*The lunar parallactic effect upon the semi-mensual inequality of high water.*

Parallax 53.9′ to 57.0′.					Parallax 53.9′ to 61.4′.					Parallax 57.1′ to 61.4′.				
Hour of moon's transit.	Lunitidal interval.	Height.	Mean parallax for each hour of transit.	Number of observations.	Hour of moon's transit.	Lunitidal interval.	Height.	Mean parallax for each hour of transit.	Number of observations.	Hour of moon's transit.	Lunitidal interval.	Height.	Mean parallax for each hour of transit.	Number of observations.
h. m.	*h. m.*	*Inches.*	′		*h. m.*	*h. m.*	*Inches.*	′		*h. m.*	*h. m.*	*Inches.*	′	
0 28.5	11 59.4	76.7	55.0	56	0 27.8	11 51.3	79.4	57.2	107	0 27.1	11 42.3	82.3	59.7	51
1 27.7	11 35.3	76.9	55.0	54	1 27.9	11 29.8	79.9	57.3	108	1 28.1	11 24.2	82.7	59.7	54
2 28.6	11 12.0	74.4	55.1	57	2 28.5	11 09.1	77.7	57.2	111	2 28.4	11 06.2	81.1	59.4	54
3 29.0	10 54.2	71.3	55.2	56	3 28.3	10 52.8	74.3	57.0	107	3 27.6	10 51.3	77.4	58.9	51
4 28.4	10 41.0	66.5	55.3	57	4 27.3	10 41.5	69.0	56.9	108	4 26.2	10 42.1	71.7	58.7	51
5 27.8	10 40.4	60.8	55.2	60	5 27.4	10 37.1	63.1	56.8	114	5 26.9	10 33.4	65.6	58.5	54
6 27.3	10 56.7	55.9	55.2	59	6 27.8	10 55.9	58.5	56.7	110	6 28.3	10 54.8	61.5	58.5	51
7 26.6	11 51.1	56.7	55.2	60	7 27.1	11 42.3	58.6	56.8	110	7 27.9	11 34.2	60.9	58.6	50
8 27.5	12 31.4	61.5	55.1	62	8 27.7	12 20.4	62.1	56.9	114	8 27.7	12 07.5	63.0	59.0	52
9 28.5	12 37.8	66.7	55.0	62	9 28.7	12 28.0	68.0	57.0	112	9 28.9	12 15.8	69.7	59.4	50
10 28.4	12 33.9	72.4	55.0	57	10 29.2	12 23.1	74.0	57.2	108	10 28.9	12 12.3	75.8	59.6	51
11 28.4	12 17.9	74.5	55.0	57	11 28.5	12 08.8	77.4	57.2	106	11 28.6	11 58.2	80.9	59.7	49
Means	11 39.3	67.9	55.1	697	Means	11 33.3	70.2	57.0	1315	Means	11 26.9	72.7	59.1	618
Ranges	118.8	21.6			Ranges	111.5	21.5			Ranges	102.5	22.1		

TABLE XII.—*The lunar parallactic effect upon the semi-mensual inequality of low water.*

Parallax 53.9′ to 57.0′.					Parallax 53.9′ to 61.4′.					Parallax 57.1′ to 61.4′.				
Hour of moon's transit.	Lunitidal interval.	Height.	Mean parallax for each hour of transit.	Number of observations.	Hour of moon's transit.	Lunitidal interval.	Height.	Mean parallax for each hour of transit.	Number of observations.	Hour of moon's transit.	Lunitidal interval.	Height.	Mean parallax for each hour of transit.	Number of observations.
h. m.	*h. m.*	*Inches.*	′		*h. m.*	*h. m.*	*Inches.*	′		*h. m.*	*h. m.*	*Inches*	′	
0 28.5	18 07.5	11.8	55.0	56	0 27.8	17 59.5	8.9	57.2	107	0 27.1	17 50.8	5.7	59.7	51
1 28.1	17 42.1	11.0	55.1	54	1 27.9	17 37.5	8.3	57.3	108	1 28.0	17 33.0	5.7	59.6	54
2 28.1	17 18.2	13.4	55.1	56	2 28.5	17 15.7	10.4	57.2	111	2 28.9	17 13.2	7.3	59.3	55
3 29.0	17 03.5	16.8	55.2	56	3 28.3	17 01.5	15.0	57.0	107	3 27.6	16 59.2	13.1	58.9	51
4 28.4	16 52.1	22.4	55.3	57	4 27.3	16 51.2	20.1	56.9	108	4 26.2	16 50.2	17.5	58.7	51
5 28.3	16 53.7	27.1	55.3	61	5 27.4	16 50.3	25.4	56.8	114	5 26.4	16 46.2	23.4	58.6	53
6 27.3	17 16.2	30.2	55.2	59	6 27.8	17 15.9	28.8	56.7	110	6 28.3	17 15.5	27.3	58.5	51
7 27.2	18 10.0	30.1	55.2	62	7 27.3	18 04.0	28.5	56.8	110	7 27.1	17 56.2	26.5	58.8	48
8 27.6	18 49.5	27.4	55.1	62	8 27.2	18 37.0	24.8	56.9	114	8 26.9	18 22.1	21.8	59.1	52
9 28.6	18 51.3	21.3	55.0	60	9 28.7	18 42.0	19.1	57.0	112	9 28.8	18 31.1	16.7	59.4	52
10 28.7	18 40.8	17.0	55.0	57	10 29.2	18 32.5	14.6	57.2	108	10 29.7	18 23.2	11.9	59.7	51
11 28.4	18 24.9	12.5	55.0	57	11 28.5	18 16.4	10.7	57.2	106	11 28.5	18 06.5	8.5	59.7	49
Means	17 50.8	20.1	55.1	697	Means ...	17 45.3	17.9	57.0	1315	Means ...	17 38.9	15.5	59.2	618
Ranges ...	122	19.2			Ranges ...	115	20.8			Ranges ...	105	21.6		

Subtracting the values in the first division of Tables XI and XII from the corresponding values in the second division, those in the second from those in the third, writing I. H. P. for Interval, Height, Parallax, and then dividing the interval and height differences by the parallax differences we obtain the lunar-parallactic effect in the form of Table XIII.

TABLE XIII.—*The change in the semi-mensual intervals and heights corresponding to a change of 1′ in the lunar parallax.*

Hour of moon's transit.	High water.				Low water.			
	$P=53.9'$ to $57.0'$		$P=57.1'$ to $61.4'$		$P=53.9'$ to $57.0'$		$P=57.1'$ to $61.4'$	
	$\frac{\delta I}{\delta P}$	$\frac{\delta H}{\delta P}$	$\frac{\delta I}{\delta P}$	$\frac{\delta H}{\delta P}$	$\frac{\delta I}{\delta P}$	$\frac{\delta H}{\delta P}$	$\frac{\delta I}{\delta P}$	$\frac{\delta H}{\delta P}$
h. m.	*m.*	*Inches.*	*m.*	*Inches.*	*m.*	*Inches.*	*m.*	*Inches.*
0 28.3	−3.7	+1.2	−3.7	+1.2	−3.6	−1.3	−3.5	−1.3
1 28.3	−2.4	1.3	−2.3	1.2	−2.1	−1.2	−2.0	−1.1
2 28.3	−1.4	1.3	−1.3	1.5	−1.2	−1.6	−1.2	−1.5
3 28.3	−0.8	1.7	−0.8	1.6	−1.1	−1.0	−1.2	−1.0
4 28.3	+0.3	1.6	+0.3	1.5	−0.6	−1.4	−0.6	−1.4
5 28.3	−2.1	1.4	−2.2	1.5	−2.3	−1.1	−2.3	−1.1
6 28.3	−0.5	1.7	−0.6	1.7	−0.2	−0.9	−0.2	−0.8
7 28.3	−5.5	1.2	−4.5	1.3	−3.7	−1.0	−3.9	−1.0
8 28.3	−6.1	0.3	−6.1	0.4	−6.9	−1.4	−6.8	−1.4
9 28.3	−4.9	0.6	−5.1	0.7	−4.7	−1.1	−4.5	−1.0
10 28.3	−4.9	0.7	−4.5	0.7	−3.8	−1.1	−3.7	−1.1
11 28.3	−4.1	1.3	−4.2	1.4	−3.9	−0.8	−4.0	−0.9
	−3.2	+1.2	−3.1	+1.2	−2.9	−1.2	−2.9	−1.1

The close accord of these values for different parallaxes entitles them to confidence, and enables us to write the lunar-parallactic effect in the briefer form of Table XIV.

TABLE XIV.—*The change in the semi-mensual intervals and heights corresponding to a change of* 1′ *in the lunar parallax.*

Hour of moon's transit.	High water.		Low water.	
	$\frac{\delta I}{\delta P}$	$\frac{\delta H}{\delta P}$	$\frac{\delta I}{\delta P}$	$\frac{\delta H}{\delta P}$
h. m.	*m.*	*Inches.*	*m.*	*Inches.*
0 28.3	−3.7	+1.2	−3.6	−1.3
1 28.3	−2.4	+1.2	−2.0	−1.2
2 28.3	−1.3	+1.4	−1.2	−1.5
3 28.3	−0.8	+1.6	−1.2	−1.0
4 28.3	+0.3	+1.5	−0.6	−1.4
5 28.3	−2.1	+1.5	−2.3	−1.1
6 28.3	−0.6	+1.7	−0.2	−0.9
7 28.3	−5.0	+1.2	−3.8	−1.0
8 28.3	−6.1	+0.4	−6.8	−1.4
9 28.3	−5.0	+0.7	−4.6	−1.1
10 28.3	−4.7	+0.7	−3.7	−1.1
11 28.3	−4.2	+1.4	−3.9	−0.9
	−3.1	+1.2	−2.9	−1.1

Here $\frac{\delta I}{\delta P}=\frac{I-I_1}{P-P_1}$ and $\frac{\delta H}{\delta P}=\frac{H-H_1}{P-P_1}$, I_1, H_1, P_1 being the interval, height, and parallax of the semi-mensual inequality derived from all the observations, or the middle division of Tables XI and XII.

These give the formulæ

$$I=I_1+\frac{\delta I}{\delta P}(P-P_1) \qquad\qquad H=H_1+\frac{\delta H}{\delta P}(P-P_1)$$

For the *non-periodical* part of the lunar-parallactic effect upon the intervals and heights we have—

For high water:

$$I=I_1-3.1^{\mathrm{m}}\,(P-57') \qquad\qquad H=H_1+1.2^{\text{ inches}}\,(P-57')$$

For low water:

$$I=I_1-2.9^{\mathrm{m}}\,(P-57') \qquad\qquad H=H_1-1.1^{\text{ inches}}\,(P-57')$$

that is, an increase of 1′ in the parallax decreases the mean establishment for both high and low water by about 3^{m}, increase the height of high water 1.2 inches, decreases the height of low water 1.1 inches, and hence increases the range 2.3 inches. Recurring to Tables XI and XII we see that the *periodical* range of the interval decreases 4.1^{m} for both high and low water for 1′ increase of parallax. All these results are in accord with theory. The periodical range of the height, on the contrary, seems slightly increased by an increase of 1′ in the parallax (0.1 inch for high and 0 6 inch for low water), which is contrary to what the theory of the superposition of small waves would lead us to expect. The values are too small, however, to entitle them to be regarded as an exception.

EFFECT OF VARIATIONS IN THE LUNAR DECLINATION UPON THE SEMI-MENSUAL INEQUALITY.

The moon's declination for noon of each day having been entered in the next to the last column of Table V, a distribution of the lunitidal intervals and heights according to the double argument, declination and phase (the declination taken without regard to sign) was now made in the manner of the preceding investigation for parallactic effect, and as there, and for like reason, the intervals and heights were associated with the declinations of the preceding day. The result of a distribution into six groups is presented in Tables XV and XVI.

TABLE XV.—*Effect of variations in lunar declination upon the semi-mensual inequality of high water.*

Declination 0° to 5°.					Declination 5.1° to 10.0°.					Declination 10.1° to 14.4°.				
Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.
h. m.	*h. m.*	*Inches.*	°		*h. m.*	*h. m.*	*Inches.*	°		*h. m.*	*h. m.*	*Inches.*	°	
0 27.6	12 00.8	79.4	3.0	19	0 27.7	11 50.4	82.9	7.4	15	0 25.8	11 59.3	79.1	12.3	20
1 27.9	11 39.3	82.4	2.3	16	1 28.5	11 39.4	81.4	7.7	22	1 25.7	11 34.8	81.5	12.7	16
2 26.4	11 24.5	78.8	2.8	14	2 32.9	11 12.8	80.8	7.7	19	2 28.0	11 09.1	76.5	12.9	20
3 27.5	11 01.3	76.3	2.8	15	3 32.4	10 57.3	75.4	8.4	16	3 32.8	10 57.2	73.6	12.6	17
4 24.5	10 44.8	70.1	3.1	17	4 30.6	10 51.5	69.0	7.5	13	4 28.4	10 49.6	71.1	12.2	18
5 24.6	10 46.3	62.8	2.2	19	5 30.6	10 38.3	65.1	7.4	16	5 27.4	10 44.7	61.0	12.2	22
6 24.8	11 10.0	60.7	2.6	20	6 32.5	11 15.1	55.7	7.7	19	6 26.9	10 55.0	57.4	12.2	16
7 25.7	12 03.5	60.2	2.5	19	7 30.4	12 03.7	58.7	7.7	22	7 24.5	11 39.7	56.9	12.6	17
8 31.1	12 34.1	62.7	2.5	19	8 21.5	12 37.9	62.0	7.9	21	8 29.3	12 15.3	64.4	12.5	17
9 30.9	12 32.4	68.4	2.6	21	9 26.4	12 29.2	66.8	7.4	18	9 27.6	12 32.5	69.8	12.1	20
10 35.2	12 34.7	76.4	2.5	18	10 26.4	12 19.0	74.0	7.5	20	10 28.0	12 24.1	73.3	12.4	20
11 32.9	12 13.2	79.5	2.6	16	11 24.6	12 17.5	78.9	7.4	16	11 29.2	12 12.3	78.0	12.2	22
339.1	11 524.9	857.7	31.5	213	344.5	11 492.1	850.7	91.7	217	333.6	11 433.6	842.6	148.9	225
28.3	11 43.7	71.5	2.6	------	28.7	11 41.0	70.9	7.6	------	27.8	11 36.1	70.2	12.4	------
Declination 14.5° to 17.7°.					**Declination 17.8° to 20.0°.**					**Declination 20.1° to 23.0°.**				
Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.
h. m.	*h. m.*	*Inches.*	°		*h. m.*	*h. m.*	*Inches.*	°		*h. m.*	*h m.*	*Inches.*	°	
0 25.2	11 48.4	79.7	16.1	14	0 30.2	11 49.4	80.0	19.1	21	0 29.8	11 37.3	76.8	21.0	18
1 24.4	11 26.7	79.1	16.1	15	1 27.5	11 23.1	77.5	18.9	21	1 32.4	11 15.3	77.3	20.9	18
2 28.3	11 08.4	78.3	16.5	17	2 27.3	11 06.4	75.5	18.5	24	2 27.9	10 56.7	76.9	21.2	17
3 28.0	10 50.6	73.5	16.0	20	3 24.3	10 49.7	73.6	19.0	22	3 26.4	10 43.4	73.2	21.0	17
4 31.1	10 38.4	68.7	16.4	18	4 26.5	10 32.8	66.9	19.1	25	4 23.9	10 38.4	69.1	21.1	17
5 27.8	10 34.8	61.8	16.3	17	5 30.8	10 30.9	63.0	19.2	21	5 23.5	10 27.0	65.1	21.3	19
6 31.6	10 54.2	57.3	16.3	17	6 25.6	10 45.7	57.9	18.9	18	6 26.6	10 34.4	61.5	21.1	20
7 29.[illegible]	11 29.3	57.5	16.2	14	7 28.2	11 27.4	57.8	19.2	21	7 24.4	11 22.3	60.1	21.1	17
8 24.7	12 08.5	62.9	16.1	20	8 29.4	12 11.3	59.4	19.2	18	8 31.0	12 09.8	61.7	21.1	19
9 27.0	12 27.9	66.4	16.0	18	9 29.6	12 29.0	67.9	18.7	15	9 29.8	12 16.9	68.4	20.8	20
10 31.2	12 23.7	75.2	16.1	19	10 29.4	12 20.7	74.0	18.9	15	10 24.7	12 19.3	70.8	21.0	16
11 28.0	12 10.7	78.7	16.3	15	11 28.8	11 57.3	75.1	19.3	20	11 27.2	12 04.0	74.9	21.1	17
336.3	11 361.6	839.1	194.4	204	337.6	11 323.7	828.6	228.0	241	327.6	11 261.8	835.8	252.7	215
28.0	11 30.1	69.9	16.2	------	28.2	11 27.0	69.1	19.0	------	27.3	11 21.8	69.7	21.1	------

TABLE XVI.—*Effect of variations in lunar declination upon the semi-mensual inequality of low water.*

Declination 0° to 5°.					Declination 5.1° to 10.0°.					Declination 10.1° to 14.4°.				
Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.
h. m.	*h. m.*	*Inches.*	°		*h. m.*	*h. m.*	*Inches.*	°		*h. m.*	*h. m.*	*Inches.*	°	
0 30.4	18 02.7	4.7	2.9	20	0 23.2	18 01.8	8.4	7.8	14	0 21.0	18 14.3	10.2	12.3	18
1 32.3	17 46.1	6.4	2.2	15	1 24.5	17 45.5	7.1	7.9	24	1 26.1	17 42.7	8.0	12.8	16
2 26.4	17 31.1	7.2	2.8	14	2 32.9	17 15.6	10.7	7.7	19	2 31.3	17 18.0	7.5	12.9	20
3 27.5	17 06.4	13.1	2.8	15	3 32.4	17 07.6	13.5	8.4	16	3 32.8	17 05.5	14.6	12.6	17
4 24.5	16 55.0	17.4	3.1	17	4 30.6	17 02.6	18.3	7.5	13	4 28.4	17 00.4	21.7	12.2	18
5 24.6	16 57.3	23.5	2.2	19	5 30.6	16 55.2	23.4	7.4	16	5 27.4	16 58.9	23.5	12.2	22
6 26.1	17 29.4	27.1	2.6	21	6 31.4	17 29.3	24.5	7.8	18	6 28.7	17 21.3	25.9	12.3	17
7 25.7	18 26.0	23.4	2.2	17	7 27.7	18 25.4	26.4	7.9	27	7 27.7	17 52.6	24.6	12.7	15
8 27.2	18 48.7	19.9	3.0	20	8 25.3	18 50.3	22.0	7.8	17	8 27.7	18 32.9	26.9	12.1	19
9 26.8	18 46.9	16.1	2.3	19	9 29.5	18 38.0	14.7	7.3	21	9 29.2	18 45.0	17.2	12.3	21
10 29.4	18 40.3	14.9	2.4	19	10 31.6	18 29.9	9.8	7.6	18	10 30.3	18 33.9	12.8	12.3	20
11 29.2	18 26.9	7.5	2.5	19	11 30.7	18 27.9	11.8	7.3	14	11 25.9	18 19.9	9.3	12.1	20
330.1	17 656.8	181.2	31.0	215	350.4	17 629.1	190.6	92.4	217	336.5	17 585.4	202.2	148.8	223
27.5	17 54.7	15.1	2.6	------	29.2	17 52.4	15.9	7.7	------	28.0	17 48.8	16.9	12.4	------

Declination 14.5° to 17.7°.					Declination 17.8° to 20.0°.					Declination 20.1° to 23.0°.				
Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.	Transit.	Interval.	Height.	Declination.	No. of observations.
h. m.	*h. m.*	*Inches.*	°		*h. m.*	*h. m.*	*Inches.*	°		*h. m.*	*h. m.*	*Inches.*	°	
0 31.2	17 56.7	8.5	16.3	15	0 29.8	17 55.0	11.5	19.1	24	0 30.3	17 46.5	9.2	20.9	16
1 25.4	17 33.5	9.2	16.1	14	1 31.1	17 29.2	8.1	18.9	19	1 28.8	17 25.2	11.3	20.9	20
2 28.3	17 17.6	13.6	16.5	17	2 27.3	17 15.0	10.5	19.0	24	2 27.9	16 59.6	12.6	21.1	17
3 28.0	17 02.3	17.1	16.0	20	3 24.3	17 00.4	14.7	19.0	22	3 26.4	16 47.5	16.6	21.0	17
4 31.1	16 47.1	21.0	16.4	18	4 26.5	16 42.9	20.8	18.8	25	4 23.9	16 45.5	20.5	21.1	17
5 27.8	16 49.6	24.2	16.3	17	5 30.8	16 43.6	27.7	19.2	21	5 23.5	16 36.9	29.5	21.3	19
6 28.7	17 12.1	28.7	16.2	16	6 25.6	17 08.7	29.8	18.9	18	6 26.6	16 54.5	36.3	21.0	20
7 29.4	17 49.9	29.4	16.0	15	7 26.8	17 56.1	33.2	19.2	19	7 25.7	17 39.1	34.5	21.0	17
8 26.9	18 30.6	25.4	16.1	19	8 24.9	18 31.5	25.1	18.9	17	8 30.2	18 29.4	29.0	21.0	22
9 30.1	18 38.9	22.4	16.1	18	9 25.3	18 42.8	22.9	18.7	14	9 30.1	18 40.5	23.4	20.9	19
10 30.0	18 32.5	17.5	16.2	18	10 26.2	18 31.1	16.7	19.2	19	10 27.3	18 25.3	16.2	21.1	14
11 27.9	18 13.1	10.6	16.2	15	11 29.2	18 09.6	13.7	19.1	19	11 28.7	18 03.2	12.0	21.1	19
344.8	17 503.9	227.6	194.4	202	327.8	17 485.9	234.7	228.0	241	329.4	17 393.2	251.1	252.4	217
28.7	17 42.0	19.0	16.2	------	27.3	17 40.5	19.6	19.0	------	27.4	17 32.8	20.9	21.0	------

Putting δ_m, I_m h_m for the mean declination, lunitidal interval, and height in Table VII, and comparing with the like quantities in Tables XV and XVI, we shall have for the non-periodical part of these tables the formulæ:

High water:

$$I-I_m=1.7^{\rm in}+168^{\rm m}\ (\sin^2\delta_m-\sin^2\delta) \qquad h-h_m=0.3^{\rm in}+15.6\ (\sin^2\delta_m-\sin^2\delta)$$

Low water:

$$I-I_m=1.7^{\rm in}+164^{\rm m}\ (\sin^2\delta_m-\sin^2\delta) \qquad h-h_m=-0.5^{\rm in}-45.7\ (\sin^2\delta_m-\sin^2\delta)$$

The presence of a constant term indicates that the mean lunitidal intervals and heights in Table VII do not exactly correspond to the mean declinations in that table, owing to the non-linear character of the relation; also, since the station lies only 8° 16′ from the terrestrial pole, the equators of the lunar and solar tidal spheroids will fall south of the station when the

south declinations of those bodies are in excess of 8° 16′, giving rise to complexity and want of symmetry not felt at stations in middle latitudes. Perhaps this fact should have been taken into consideration in the preceding distribution into declination groups.

The failure of the periodical part of Tables XV and XVI to satisfy the formula

$$I-I_m=(\sin^2\delta_m-\sin^2\delta)\ (A+B\sin 2\ (\varphi-\beta))^*$$

was so marked that it could serve no useful purpose to publish the tables of residuals. This was probably due in large measure to the fact that the periodical values of Tables XV and XVI depend upon only a few observations and are not free from incidental irregularities.

INVESTIGATION OF THE DIURNAL INEQUALITY.

At Fort Conger there occur on the average two high and two low waters each mean lunar day. Usually, however, the two high waters are of unequal height, and divide the twenty-four lunar hours into unequal parts, and the like is true of the two low waters. This disparity of times and heights is observed to characterize the semi-diurnal tides in almost all parts of the world, and is known as the diurnal inequality. Some of its laws are obvious. For example, suppose the successive semi-diurnal high waters at a station to be numbered 1, 2, 3, etc., then observation shows that for about half a tropical or declination month the odd tides are higher than the even, followed by the even higher than the odd for an equal period, and so on alternately, the disparity in height fluctuating gradually, and with more or less regularity, between its extreme limits, its complete cycle a declination month. In like manner it will be found that for about half a declination month at a time the even follow the odd tides at an interval less than twelve lunar hours, then for a like period at an interval greater than twelve lunar hours, and so on alternately. The phenomenon is as pronounced in the case of low as in that of high waters, and follows like laws.

Observation having shown that the diurnal inequality runs through a complete cycle in a period usually not differing materially from a declination month the phenomenon is supposed to depend principally upon the varying declination of the moon, and in expository writings not purely analytical is ascribed to a consequent oscillation in latitude of the poles of the lunar tidal spheroid. This explanation may suffice for the diurnal inequality of high water, both in time and height, but the writer is unable to perceive that it makes the slightest advance toward accounting for the equally well established diurnal inequality in low water.

To separate the wave causing the diurnal inequality from the semi-diurnal wave the method adopted was a graphical process devised by the late Assistant L. F. Pourtales of the U. S. Coast Survey.† The hourly observations were laid down upon profile paper to convenient scale, as far as they extended, followed by the observed high and low waters to the end of the series, and the continuous curve drawn in with a free hand. A tracing in ink having been taken the traced curve was shifted forward in epoch twelve mean lunar hours and a mean curve run in with a pencil; the traced curve was then shifted backward from its first position twelve mean lunar hours and a second mean curve run in with pencil; and, finally, the mean of the two pencil curves was run in with ink (of another color) and taken as the semi-diurnal wave, the difference between the two ink curves as the superposed wave causing the diurnal inequality.

The method of Pourtales, though laborious, is presumably not more so than the numerical methods hitherto devised, and in point of precision it suffices, as proved in this reduction, to bring out distinctly a quantity amounting in the maximum to only a few inches, using a scale of 1-20. The adoption of a larger scale would readily raise the precision of the method to equality with that of observations of standard excellence made under the most favorable circumstances. The method possesses the signal advantage of bringing out the *physical fact, unaffected by the preconceived theories of the investigator*, a matter of some importance in dealing with tidal observations, where a numerical analysis, based upon a misconception of the period or nature of a phenomenon, might result in values depending for their appearance upon imperfect elimination. Where the series is long enough to complete the elimination the null result would put the computer upon inquiry, but even in this case the loss of labor is well worthy of consideration.

Plate I exhibits a specimen of the results obtained by an application of Pourtales's method to the Fort Conger series, the minor irregularities of the curves being omitted. The example was chosen to exhibit the diurnal wave at a time when the sun's declination is large. It is seen that the solar effect upon the heights is fully equal to the lunar, and that the period of

*Whewell, Phil. Trans., 1834, p. 40.

†This method was first published by Assistant Charles A. Schott, of the U. S. Coast Survey, in his discussion of Dr. Kane's tidal observations at Van Rensselaer Harbor (Smithsonian Contributions to Knowledge, Vol. XIII). Mr. Schott again made use of the method in his discussion of Dr. Hayes's tidal observations at Port Foulke (Smithsonian Contributions, Vol. XV). In the present discussion these two memoirs by Mr. Schott have been freely consulted. The reader is here referred to them for much valuable information on tidal theory and phenomena not contained in these pages.

the diurnal wave, instead of oscillating about a mean lunar day, is approximately a solar day. There is, indeed, during the calendar month represented in the plate a tendency on the part of the diurnal wave to out-run the sun, high water coming along somewhat earlier from day to day.*

On proceeding to read and tabulate the high and low waters of the diurnal inequality wave it was found that the first year only of the series was well fitted for the purpose, the free-hand continuous curve through the observed high and low waters of the second year not conforming with sufficient precision to the law of the wave. The readings of the diurnal inequality wave from August 21, 1881, to August 25, 1882, are given in Table XVII. The times of high and low water being much more indeterminate than the times when the wave vanishes the curve was read for high and low water at points midway between the nodes or points of no wave. This probably displaces in some degree the times of high and low water and diminishes the range.

The readings have also been partially freed from incidental irregularities by two applications of the method of successive means, or the numerical bisection of chords. Wherever the hour is affected with the minus sign the quantity must be subtracted from 24^h, and one day from the date, in order to obtain the epoch in the usual notation. Thus the tabular time of low water, 1882, June 1, -10.9^h, is 1882, May 31, 13.1^h after midnight in the ordinary reckoning. The heights are measured from the surface of the semi-diurnal wave.

TABLE XVII.—*Times and heights of high and low diurnal tide.*

Date.	High water.		Low water.		Date.	High water.		Low water.		Date.	High water.		Low water.	
	Time.	Height.	Time.	Height.		Time.	Height.	Time.	Height.		Time.	Height.	Time.	Height.
1881.	*h.*	*Inches.*	*h.*	*Inches.*	1881.	*h.*	*Inches.*	*h.*	*Inches.*	1881.	*h.*	*Inches.*	*h.*	*Inches.*
Aug. 21	+23.8	+5.3	-------	-------	Sept. 28	+17.3	+6.0	+ 5.3	−3.5	Nov. 5	+14.1	+3.7	+ 2.0	−2.5
22	+23.5	+3.3	+11.7	−3.5	29	+18.3	+5.5	+ 6.1	−3.5	6	+14.5	+4.3	+ 2.1	−3.5
23	+23.1	+3.0	+11.5	−3.5	30	+18.9	+3.7	+ 6.7	−4.5	7	+15.3	+5.0	+ 2.8	−5.0
24	+22.5	+2.5	+10.9	−3.0	Oct. 1	+19.7	+3.3	+ 7.5	−4.5	8	+16.1	+4.5	+ 3.7	−4.7
25	+21.9	+1.5	+10.1	−2.3	2	+20.3	+3.5	+ 8.5	−3.5	9	+16.5	+4.0	+ 4.3	−4.3
26	+21.6	+0.7	+ 9.2	−2.0	3	+20.7	+3.0	+ 8.5	−3.0	10	+16.3	+4.3	+ 4.5	−5.0
27	+21.5	+0.3	+ 9.3	−2.0	4	+20.9	+1.7	+ 8.5	−2.5	11	+15.9	+4.3	+ 4.3	−5.7
28	+21.3	+0.3	+ 9.4	−1.7	5	+19.9	+0.7	+ 8.4	−2.5	12	+15.7	+3.5	+ 4.1	−5.3
29	+20.9	+1.3	+ 8.9	−2.5	6	+17.9	+0.3	+ 6.8	−4.5	13	+15.5	+3.0	+ 3.7	−4.0
30	+20.4	+2.5	+ 8.7	−3.0	7	+16.6	+0.3	+ 5.4	−5.0	14	+15.0	+3.3	+ 3.3	−4.0
31	+19.7	+3.0	+ 8.3	−3.0	8	+15.9	+1.7	+ 4.5	−3.0	15	+14.9	+3.7	+ 2.8	−4.5
Sept. 1	+19.7	+3.3	+ 7.8	−3.3	9	+15.7	+2.7	+ 3.7	−2.0	16	+14.5	+3.7	+ 2.7	−4.5
2	+20.6	+3.5	+ 8.3	−3.5	10	+15.9	+3.5	+ 3.5	−2.5	17	+14.2	+3.3	+ 2.3	−3.7
3	+21.9	+3.5	+ 9.5	−3.5	11	+16.2	+5.3	+ 4.0	−4.3	18	+14.1	+3.5	+ 2.1	−3.0
4	+22.9	+3.7	+10.6	−3.7	12	+16.5	+5.5	+ 4.5	−4.7	19	+13.9	+4.7	+ 1.9	−3.7
5	+23.2	+4.0	+11.4	−3.7	13	+16.7	+4.7	+ 4.5	−3.3	20	+13.8	+5.3	+ 1.7	−4.3
6	+22.8	+3.7	+11.1	−4.0	14	+17.7	+3.7	+ 5.0	−3.0	21	+14.3	+4.5	+ 2.1	−4.0
7	+22.3	+3.0	+10.3	−4.5	15	+18.9	+3.0	+ 6.3	−3.5	22	+15.1	+3.5	+ 2.7	−4.7
8	+22.3	+2.0	+10.3	−3.5	16	+19.5	+2.7	+ 7.5	−3.0	23	+15.7	+3.5	+ 3.5	−5.3
9	+22.1	+1.5	+10.2	−2.5	17	+19.8	+2.3	+ 7.9	−2.3	24	+15.8	+4.3	+ 3.8	−3.7
10	+21.2	+1.7	+ 9.5	−3.3	18	+18.7	+1.7	+ 7.2	−2.0	25	+15.6	+4.0	+ 3.4	−3.0
11	+20.1	+2.0	+ 8.7	−4.3	19	+17.6	+1.5	+ 5.9	−2.7	26	+15.6	+4.3	+ 3.6	−4.3
12	+19.1	+2.0	+ 7.5	−4.3	20	+17.3	+1.7	+ 5.4	−3.5	27	+15.5	+5.7	+ 3.9	−5.3
13	+18.5	+2.5	+ 6.7	−3.7	21	+16.4	+2.3	+ 4.9	−3.3	28	+14.9	+5.5	+ 3.4	−5.3
14	+18.5	+3.5	+ 6.5	−3.5	22	+15.1	+3.0	+ 3.9	−3.0	29	+13.9	+3.3	+ 2.7	−3.7
15	+18.9	+4.0	+ 6.6	−3.7	23	+14.4	+4.0	+ 2.7	−2.7	30	+13.7	+3.0	+ 1.8	−2.5
16	+19.3	+3.7	+ 7.1	−3.7	24	+14.7	+4.5	+ 2.4	−2.5	Dec. 1	+13.8	+4.0	+ 1.5	−3.0
17	+20.0	+3.0	+ 8.0	−3.3	25	+15.3	+4.5	+ 2.9	−2.5	2	+13.9	+2.5	+ 1.8	−3.3
18	+20.7	+2.5	+ 8.7	−3.0	26	+15.9	+4.7	+ 3.5	−2.7	3	+13.9	+2.0	+ 1.9	−2.7
19	+20.6	+2.5	+ 9.1	−2.7	27	+16.4	+5.0	+ 4.1	−3.3	4	+13.7	+4.7	+ 1.7	−3.7
20	+20.5	+2.3	+ 8.9	−2.3	28	+16.8	+4.7	+ 4.7	−4.0	5	+13.9	+6.0	+ 1.9	−5.3
21	+20.5	+1.5	+ 8.5	−1.7	29	+17.1	+4.3	+ 4.9	−4.5	6	+14.0	+5.0	+ 1.9	−5.0
22	+19.5	+0.3	+ 7.5	−1.3	30	+16.7	+3.7	+ 4.7	−4.0	7	+14.2	+5.0	+ 1.9	−4.5
23	+17.7	−0.3	+ 6.0	−1.5	31	+16.3	+3.5	+ 4.5	−3.7	8	+15.1	+5.3	+ 2.7	−4.3
24	+16.9	+1.0	+ 5.1	−2.7	Nov. 1	+16.5	+3.5	+ 4.7	−5.0	9	+15.9	+4.0	+ 3.5	−3.7
25	+16.9	+2.5	+ 5.0	−3.7	2	+15.7	+3.3	+ 4.2	−5.5	10	+14.1	+3.0	+ 3.1	−3.5
26	+16.9	+3.3	+ 4.7	−4.3	3	+14.5	+3.5	+ 3.1	−4.0	11	+12.9	+3.3	+ 1.4	−3.0
27	+17.1	+4.5	+ 4.7	−4.3	4	+14.2	+4.0	+ 2.3	−2.7	12	+12.7	+3.5	+ 0.3	−2.5

*Whewell, Phil. Trans., 1837, p. 227. "The diurnal inequality of the height of high and low water may be conceived to arise from an oscillating wave, of which the maximum height comes to each place once in twenty-four (lunar) hours." This notion seems to have been propagated through tidal literature even to our own times. Mr. Haughton seems to regard the diurnal inequality as due to two waves, the one coming round once each lunar, the other once each solar day. See Phil. Trans., 1863, pp. 243–255, 1875, pp, 331–353.

TABLE XVII.—*Times and heights of high and low diurnal tide*—Continued.

Date.	High water.		Low water.	
	Time.	Height.	Time.	Height.
1881.	*h.*	*Inches.*	*h.*	*Inches.*
Dec. 13	+13.3	+3.5	+ 1.1	−2.7
14	+13.9	+3.0	+ 1.9	−2.5
15	+14.1	+2.3	+ 2.1	−2.3
16	+13.5	+2.5	+ 1.8	−3.0
17	+12.0	+4.3	+ 0.7	−4.0
18	+11.4	+5.0	− 0.5	−4.7
19	+12.5	+3.7	− 0.3	−5.3
20	+13.9	+3.3	+ 1.3	−6.3
21	+14.5	+3.3	+ 2.4	−7.0
22	+14.1	+4.0	+ 2.3	−6.3
23	+13.4	+4.7	+ 1.7	−5.0
24	+13.6	+4.0	+ 1.5	−4.3
25	+13.8	+4.0	+ 2.0	−4.3
26	+13.7	+4.3	+ 1.9	−4.0
27	+14.1	+4.0	+ 1.7	−3.3
28	+14.3	+4.3	+ 2.1	−3.5
29	+13.9	+5.0	+ 1.7	−3.5
30	+13.0	+4.7	+ 0.9	−3.0
31	+13.9	+3.5	+ 1.5	−2.7
1882.				
Jan. 1	+14.6	+3.3	+ 2.5	−2.7
2	+14.0	+3.5	+ 2.4	−3.0
3	+13.7	+3.7	+ 1.8	−3.0
4	+12.0	+6.0	+ 1.9	−5.0
5	+13.6	+8.0	+ 2.5	−4.5
6	+14.5	+5.7	+ 3.0	−6.5
7	+14.4	+4.5	+ 2.5	−3.7
8	+14.6	+3.7	+ 2.5	−4.0
9	+14.3	+2.3	+ 2.5	−2.7
10	+14.5	+1.7	+ 2.7	−1.3
11	+14.5	+3.0	+ 2.7	−2.3
12	+13.3	+4.0	+ 1.9	−3.5
13	+11.7	+4.0	+ 0.1	−3.5
14	+11.1	+4.7	− 1.3	−4.3
15	+12.5	+6.0	− 0.4	−6.0
16	+13.7	+6.7	+ 1.3	−6.5
17	+13.5	+8.0	+ 1.7	−6.3
18	+13.5	+8.5	+ 1.5	−7.5
19	+13.9	+6.3	+ 1.9	−7.5
20	+13.8	+4.3	+ 1.9	−5.5
21	+14.0	+3.5	+ 1.9	−4.7
22	+14.4	+2.7	+ 2.2	−4.5
23	+14.5	+3.0	+ 1.9	−3.0
24	+13.9	+4.0	+ 2.3	−1.7
25	+12.0	+4.0	+ 1.2	−1.7
26	+10.9	+3.7	− 0.5	−3.0
27	+10.9	+3.7	+ 1.5	−4.3
28	+11.3	+5.0	+ 0.9	−4.3
29	+11.4	+6.5	+ 0.3	−4.3
30	+11.1	+7.0	+ 0.7	−4.7
31	11.1	+6.0	+ 1.0	−4.5
Feb. 1	+12.1	+4.7	− 0.5	3.5
2	+13.3	+3.5	+ 0.3	−3.3
3	+13.7	+3.3	+ 1.1	−4.0
4	+14.1	+3.0	+ 2.1	−3.3
5	+13.5	+2.7	+ 2.5	−1.5
6	12.1	+2.7	+ 1.1	−1.3
7	+10.9	+2.5	− 0.8	−1.5
8	+10.5	+3.3	1.7	−2.3
9	+11.3	+4.3	1.1	−3.5
10	+11.7	+3.7	− 0.4	3.7
11	10.9	+3.0	− 0.7	−3.7
12	+10.2	+3.7	1.4	−4.5
13	+10.2	+4.7	1.7	−5.3
14	+10.8	+5.5	− 1.5	−5.5
15	11.5	+5.5	1.0	−5.0

Date.	High water.		Low water.	
	Time.	Height.	Time.	Height.
1882.	*h.*	*Inches.*	*h.*	*Inches.*
Feb. 16	+12.3	+3.5	− 0.1	−3.5
17	+12.1	+2.7	+ 0.5	−2.0
18	+11.3	+4.0	+ 0.3	−2.0
19	+10.3	+2.7	− 1.1	−2.5
20	+ 9.0	+0.5	− 3.2	−1.7
21	+ 8.8	+0.3	− 3.9	−1.5
22	+ 9.0	+0.3	− 3.1	−2.7
23	+ 9.0	+0.3	− 2.9	−3.3
24	+ 8.8	+1.5	− 2.9	−2.7
25	+ 8.7	+4.0	− 3.1	−3.7
26	+ 9.5	+5.5	− 2.7	−5.3
27	+ 9.9	+4.7	− 2.0	−4.0
28	+10.0	+4.3	− 2.1	−2.5
Mar. 1	+11.3	+4.3	− 1.9	−2.7
2	+12.9	+3.3	− 0.1	−2.3
3	+13.7	+2.5	+ 1.5	−1.5
4	+13.1	+2.0	+ 1.7	−1.5
5	+11.2	+1.3	+ 0.5	−0.7
6	+ 8.5	+1.5	− 2.1	−0.5
7	+ 7.0	+1.5	− 4.7	−1.5
8	+ 7.4	+1.3	− 4.9	−2.0
9	+ 7.7	+2.3	− 4.1	−2.5
10	+ 7.3	+2.7	− 4.7	−3.3
11	+ 7.4	+2.5	− 5.0	−3.3
12	+ 7.1	+2.5	− 4.7	−3.7
13	+ 7.1	+2.5	− 4.9	−4.5
14	+ 8.3	+3.5	− 4.2	−3.7
15	+ 9.5	+4.5	− 2.9	−2.7
16	+ 9.6	+3.5	− 2.2	−2.0
17	+ 9.5	+2.5	− 2.2	−1.5
18	+ 9.9	+2.5	− 2.5	−1.5
19	+ 9.5	+1.7	− 2.4	−1.5
20	+ 7.8	+0.5	− 3.3	−1.5
21	+ 5.7	+0.3	− 5.3	−1.7
22	+ 4.7	+1.0	− 6.7	−1.7
23	+ 5.7	+1.5	− 6.9	−0.7
24	+ 6.9	+2.0	− 5.6	−0.3
25	+ 7.1	+3.5	− 4.7	−1.7
26	+ 6.8	+4.0	− 5.1	−3.5
27	+ 6.5	+3.0	− 5.5	−3.5
28	+ 6.9	+2.7	− 5.3	−3.0
29	+ 7.3	+2.7	− 5.0	−2.3
30	+ 6.3	+1.7	− 5.3	−1.3
31	+ 5.9	+0.5	− 5.7	−0.5
Apr. 1	+ 6.1	+0.0	− 5.7	+0.3
2	+ 6.3	+0.0	− 5.8	+0.5
3	+ 5.8	+0.7	− 6.0	−0.3
4	+ 3.5	+2.0	− 7.4	−1.3
5	+ 1.9	+2.5	− 9.5	−1.5
6	+ 2.6	+3.0	− 9.9	−1.7
7	+ 3.9	+3.5	− 8.8	−2.0
8	+ 4.6	+4.7	− 7.7	−3.0
9	+ 5.2	+5.0	− 6.9	−5.3
10	+ 5.7	+4.7	− 6.6	−5.7
11	+ 6.0	+4.7	− 6.3	−4.0
12	+ 6.2	+3.5	− 5.9	−3.0
13	+ 6.3	+2.5	− 5.9	−3.0
14	+ 6.3	+3.0	− 5.9	−3.3
15	+ 5.5	+3.5	− 6.2	−3.5
16	+ 4.3	+3.7	− 7.0	−3.3
17	+ 3.0	+3.7	− 8.1	−2.7
18	+ 2.7	+3.7	− 9.1	−2.7
19	+ 3.2	+4.3	− 8.9	−4.0
20	+ 3.6	+4.0	− 8.2	−4.3
21	+ 3.9	+4.3	− 8.0	−2.7
22	+ 3.7	+5.0	− 8.3	−2.0

Date.	High water.		Low water.	
	Time.	Height.	Time.	Height.
1882.	*h.*	*Inches.*	*h.*	*Inches.*
Apr. 23	+ 3.8	+4.5	− 8.5	−3.0
24	+ 4.6	+3.7	− 7.9	−4.5
25	+ 4.5	+3.0	− 7.7	−4.0
26	+ 4.2	+2.3	− 7.9	−3.0
27	+ 4.6	+1.7	− 7.5	−2.7
28	+ 4.7	+1.7	− 7.4	−2.0
29	+ 3.7	+2.0	− 7.7	−2.3
30	+ 2.3	+2.3	− 8.5	−3.3
May 1	+ 1.3	+2.3	−10.1	−3.0
2	+ 1.2	+1.5	−11.1	−2.5
3	+ 2.0	+1.0	−10.5	−2.0
4	+ 2.7	+1.5	− 9.7	−2.5
5	+ 3.1	+3.0	− 9.2	−5.5
6	+ 3.5	+4.3	− 8.9	−8.0
7	+ 3.8	+4.0	− 8.3	−7.3
8	+ 4.1	+3.3	− 7.9	−5.3
9	+ 4.5	+3.5	− 7.5	−4.3
10	+ 4.8	+3.5	− 7.3	−3.5
11	+ 4.4	+2.7	− 7.3	−3.0
12	+ 3.8	+2.7	− 8.1	−3.3
13	+ 3.0	+2.7	− 8.8	−3.3
14	+ 1.9	+2.7	− 9.5	−3.0
15	+ 1.7	+4.0	−10.3	−3.7
16	+ 1.2	+6.3	−10.0	−4.5
17	+ 1.2	+8.0	− 9.5	−5.0
18	+ 3.1	+7.7	− 9.1	−5.3
19	+ 3.7	+6.3	− 8.6	−4.5
20	+ 3.8	+5.0	− 8.1	−4.5
21	+ 3.5	+4.7	− 8.2	−4.7
22	+ 3.2	+5.0	− 8.8	−4.3
23	+ 2.9	+3.7	− 8.9	−3.5
24	+ 2.7	+2.0	− 9.2	−2.7
25	+ 2.7	+1.7	− 9.5	−2.7
26	+ 2.7	+2.3	− 9.4	−3.0
27	+ 1.9	+2.7	− 9.5	−2.7
28	+ 1.2	+3.3	−10.3	−2.7
29	+ 0.9	+4.0	−11.1	−3.5
30	+ 0.6	+5.0	−11.3	−4.3
31	+ 0.9	+6.0	−11.1	−4.7
June 1	+ 1.5	+6.5	−10.9	−4.7
2	+ 2.1	+5.7	−10.3	−5.0
3	+ 2.4	+5.3	− 9.7	−6.3
4	+ 2.8	+5.7	− 9.5	−6.0
5	+ 3.3	+5.5	8.9	−4.7
6	+ 3.7	+4.7	− 8.2	−5.0
7	+ 3.4	+4.5	− 8.7	−5.5
8	+ 2.5	+4.0	− 9.6	−5.0
9	+ 1.6	+3.0	−10.2	−4.3
10	+ 0.5	+2.3	−10.7	−3.3
11	+ 0.4	+2.3	−11.7	−2.7
12	+ 0.2	+3.3	−12.1	−3.3
13	+ 1.1	+4.3	−11.3	−3.3
14	+ 1.8	+4.7	−10.5	−3.7
15	+ 2.0	+6.0	−10.1	−4.5
16	+ 2.1	+8.0	−10.0	−6.0
17	+ 2.3	+8.0	− 9.8	−7.5
18	+ 2.5	+6.0	− 9.4	−5.3
19	+ 2.3	+5.0	− 9.5	−3.3
20	+ 2.0	+4.7	−10.0	−4.0
21	+ 1.9	+4.5	10.1	−4.5
22	+ 2.1	+4.3	−10.1	−4.3
23	+ 2.0	+3.5	9.9	−3.0
24	+ 1.3	+3.3	−10.1	−2.3
25	+ 0.7	+3.7	−10.9	−3.5
26	+ 0.3	+3.7	−11.5	[illegible]
27	+ 0.3	+4.0	−12.1	−4.5

TABLE XVII.—*Times and heights of high and low diurnal tide*—Continued.

Date.	High water.		Low water.		Date.	High water.		Low water.		Date.	High water.		Low water.	
	Time.	Height.	Time.	Height.		Time.	Height.	Time.	Height.		Time.	Height.	Time.	Height.
1882.	*h.*	*Inches.*	*h.*	*Inches.*	1882.	*h.*	*Inches.*	*h.*	*Inches.*	1882.	*h.*	*Inches.*	*h.*	*Inches.*
June 28	+ 0.5	+4.7	-12.5	-5.5	July 19	+ 1.5	+2.3	-10.0	-3.3	Aug. 8	- 2.1	+3.5	-12.9	-2.0
29	+ 0.3	+4.5	-12.1	-6.3	20	+ 0.3	+1.5	-11.0	-2.5	9	- 2.7	+3.0	-15.4	-2.3
30	+ 0.9	+3.3	-11.4	-5.3	21	- 0.3	+1.3	-12.5	-2.0	10	- 1.5	+4.5	-14.4	-2.3
July 1	+ 1.4	+1.7	-10.7	-3.5	22	- 1.3	+2.0	-13.5	-3.3	11	- 0.9	+7.0	-13.0	-3.7
2	+ 2.3	+1.5	-10.1	-1.3	23	- 2.1	+2.7	-13.9	-3.3	12	- 0.6	+4.7	-12.7	-4.0
3	+ 2.3	+3.0	- 9.7	-0.7	24	- 2.3	+3.5	-14.1	-3.3	13	- 0.5	-0.3	-12.5	-1.1
4	+ 1.8	+4.5	-10.1	-2.7	25	- 1.7	+4.0	-14.0	-4.0	14	- 0.7	+1.5	-12.5	+0.1
5	+ 2.5	+5.0	-10.3	-4.0	26	- 1.2	+3.3	-13.5	-3.5	15	- 0.5	+4.7	-12.5	-1.7
6	+ 4.3	+3.5	- 8.9	-3.0	27	- 0.8	+1.7	-13.0	-2.7	16	- 0.0	+4.3	-12.3	-3.5
7	+ 4.8	+1.0	- 6.5	-1.3	28	- 1.3	+1.3	-13.3	-2.3	17	- 0.0	+3.3	-12.0	-3.5
8	+ 4.3	+0.5	- 6.9	-0.5	29	- 2.0	+1.5	-13.8	-1.5	18	- 0.5	+2.5	-12.3	-3.0
9	+ 3.7	+1.3	- 7.7	-0.5	30	- 0.5	+1.3	-13.1	-0.5	19	- 0.8	-0.3	-12.7	-2.0
10	+ 2.1	+2.0	- 9.2	-0.5	31	+ 1.7	+2.0	-11.3	-0.7	20	- 0.9	-3.0	-12.8	-1.0
11	+ 0.0	+2.3	-11.6	-1.5	Aug. 1	+ 2.7	+2.7	- 9.9	-2.3	21	- 1.3	-2.3	-12.9	-0.0
12	+ 0.5	+2.3	-12.7	-3.7	2	+ 2.5	+1.7	- 9.3	-2.5	22	- 1.7	+0.5	-13.5	-0.0
13	+ 0.5	+3.0	-12.0	-5.7	3	+ 2.1	+1.0	- 9.4	-1.5	23	- 0.5	+2.3	-13.3	-1.3
14	+ 1.3	+2.3	-10.9	-5.7	4	+ 2.0	+1.3	- 9.7	-1.3	24	+ 1.5	+2.5	-11.3	-2.5
15	+ 1.2	+1.0	-10.5	-4.0	5	+ 2.1	+1.7	- 9.7	-1.5	25	+ 1.1	+3.3	10.3	-3.0
16	+ 0.0	+2.3	-11.4	-2.7	6	+ 2.4	+3.5	- 9.4	-2.0					
17	+ 0.3	+3.3	-12.2	-2.5	7	+ 0.9	+4.7	- 9.9	-2.3	Means	....	+3.34	......	-3.34
18	+ 1.5	+2.7	-10.9	-2.7										

The tendency exhibited by the diurnal inequality wave in Plate I to out-run the sun is confirmed by Table XVII, where the mean period is seen to be about a sidereal day, that is, in 365 solar days there occur 366 high and 366 low diurnal inequality tides, high water oscillating about the sidereal epoch $19^h\ 36.1^m$, low water about the sidereal epoch $7^h\ 36.1^m$. This appears more clearly from an inspection of fig. 1, Plate II, where the initial points of the civil days have been taken on the axis of abscissas at intervals of a millimeter, the mean solar hour of high and low diurnal inequality tide for each day laid off as ordinates, and the sidereal epochs, $19^h\ 36.1^m$, $7^h\ 36.1^m$, as oblique axes. It has also been found from further readings of the diurnal inequality curve that 27 high waters between June 4 and 30, 1883, arrived at times ranging from 16.9^h to 22.2^h sidereal time, the mean epoch being $19^h\ 29^m$.

The theory that the diurnal inequality is caused by a tide that comes along on an average once each lunar day is thus seen not to be true at Fort Conger. Nor is it true at Polaris Bay, Van Rensselaer Harbor, or Port Foulke, as an examination of the reductions for those stations shows. The breaking away from lunar time was brought out by Pourtales's method in Mr. Schott's reduction of the Port Foulke tides and did not fail to fix his attention. He remarks, page 160: "The epoch of the diurnal wave appears to remain sensibly the same during the twenty days for which it has been brought out, that is to say, its high water appears to occur at noon, and consequently its low water at midnight; the variations from these hours are confined within an hour before or after. The Van Rensselaer Harbor tides afforded but a bare glimpse at the diurnal tide which occurred between October 30 and November 22, 1853; there also its high water appeared to hang about the hours two or three after noon, and its low water the same number of hours after midnight; but as theory points out a different relation than that of solar time, ***and consequently a gradual slow shifting from the solar hours***, and as our series is too short to show its conformity or non-conformity therewith, we are compelled to leave this interesting branch of the discussion."

Reading the diurnal inequality tide from Plate III, accompanying Mr. Schott's reduction of the Port Foulke tidal observations, we have as the mean from 20 high and 20 low waters between November 21 and December 10, 1860, 17.1^h for the sidereal time of high water on November 30. From the corresponding plate at Van Rensselaer Harbor 24 high and 24 low waters, between October 30 and November 22, 1853, give 18.4^h as the sidereal time of high water of the diurnal inequality tide on November 10. The mean establishment at Van Rensselaer exceeds that at Port Foulke by 0.4^h. Assuming the same velocity of propogation for the diurnal wave this would bring the Port Foulke diurnal high water to Van Rensselaer at 17.5^h sidereal time on November 30, 1860. On November 10, 1853, it arrived at the sidereal hour 18.4^h. The inference that the period of the diurnal inequality wave does not differ materially from a sidereal day in the neighborhood of these stations seems a just one. The assumption of a mean solar day would give the outstanding residual more than twice as great, while a period approximating to a lunar day is very improbable.

This characteristic of the diurnal inequality wave is not noticed in the reduction of the seven-month series at Polaris Bay,* but fortunately the method of Pourtales having been employed and two examples given in the plates, we have to hand the data from which to establish its existence. From 8 readings of high and 8 of low water between January 1 and 8, 1872, 16 of high and 15 of low between May 22 and June 6, following, it appears that the high water of the diurnal inequality wave arrived at Polaris Bay January 4 at 23.3^{h} and on May 29 at 21.7^{h} sidereal time. The probability that the period of this wave differs materially from a sidereal day is very slight.

The inference from these facts is that from Smith Sound to Robeson Channel the mean period of the diurnal inequality wave is practically, if not precisely, a sidereal day.†

The range of the diurnal inequality wave at Fort Conger is small, the mean of 370 high waters rising 3.34 inches above and the mean of 369 low waters falling 3.34 inches below the surface of the semi-diurnal wave. The mean range of the semi-diurnal tide may be taken as approximately 49 inches. Hence the ranges of the two components are to each other as 6.68 to 49, or as 1 to 7⅓ nearly. At Port Foulke these ranges were to each other nearly as 1 to 2⅓. The disparity of these ratios is worthy of attention.

To determine the respective influences of the moon and sun in raising the diurnal inequality wave Tables XVIII and XIX were formed from Table XVII according to a principle that readily appears from inspection of the tables themselves. To allow for retard the declinations antedate by a day the heights with which they are associated. The mean lunar range, derived from 54 high and 54 low waters, or nearly two declination months, the sun's declination meanwhile confined within the limits $\pm 5.1^{\circ}$, was found to be 5.0 inches; the mean solar range, derived from 54 high and 54 low waters, the moon ranging in declination from -4.5° to $+5.1^{\circ}$, was found to be 4.9 inches, that is, the moon and sun have practically at this station an equal influence in causing the diurnal inequality.

TABLE XVIII.—*Height of the lunar diurnal wave.*

Date.	Moon's declination.	Sun's declination.	Height.		Date.	Moon's declination.	Sun's declination.	Height.	
			H. W.	L. W.				H. W.	L. W.
1881.	°	°	*Inches.*	*Inches.*	1882.	°	°	*Inches.*	*Inches.*
Sept. 10	+ 7.4	+5.1	+1.7	−3.3	Mar. 8	− 9.9	−5.1	+1.3	−2.0
11	12.3	--------	2.0	4.3	9	13.7	--------	2.3	2.5
12	16.4	--------	2.0	4.3	10	16.9	--------	2.7	3.3
13	19.5	--------	2.5	3.7	11	19.5	--------	2.5	3.3
14	21.5	--------	3.5	3.5	12	21.1	--------	2.5	3.7
15	22.4	--------	4.0	3.7	13	21.5	--------	2.5	4.5
16	22.2	--------	3.7	3.7	14	20.8	--------	3.5	3.7
17	20.9	--------	3.0	3.3	15	18.8	--------	4.5	2.7
18	18.7	--------	2.5	3.0	16	15.6	--------	3.5	2.0
19	15.8	--------	2.5	2.7	17	11.3	--------	2.5	1.5
20	12.2	--------	2.3	2.3	18	6.3	--------	2.5	1.5
21	8.1	--------	1.5	1.7	19	− 0.8	--------	1.7	1.5
22	+ 3.7	--------	+0.3	1.3	20	+ 4.7	--------	0.5	1.5
23	− 0.9	--------	−0.3	1.5	21	9.9	--------	0.3	1.7
24	5.6	--------	+1.0	2.7	22	14.3	--------	1.0	1.7
25	10.0	--------	2.5	3.7	23	17.8	--------	1.5	0.7
26	14.2	--------	3.3	4.3	24	20.2	--------	2.0	0.3
27	17.7	--------	4.5	4.3	25	21.3	--------	3.5	1.7
28	20.3	--------	6.0	3.5	26	21.3	--------	4.0	3.5
29	21.9	--------	5.5	3.5	27	20.2	--------	3.0	3.5
30	22.3	--------	3.7	4.5	28	18.2	--------	2.7	3.0
Oct. 1	21.3	--------	3.3	4.5	29	15.4	--------	2.7	2.3
2	19.0	--------	3.5	3.5	30	12.1	--------	1.7	1.3
3	15.5	--------	3.0	3.0	31	8.2	--------	0.5	−0.5
4	11.0	--------	1.7	2.5	Apr. 1	+ 4.1	--------	0.0	+0.3
5	5.9	--------	0.7	2.5	2	− 0.2	--------	0.0	+0.5
6	− 0.4	−5.0	+0.3	−4.5	3	4.6	+5.1	+0.7	−0.3
Means	--------	--------	+2.60	−3.31	Means	--------	--------	+2.08	−1.98

* U. S. Arctic Expedition, steamer *Polaris*, C. F. Hall, commanding, Vol. I, pp. 19–86.

† The Superintendent of the U. S. Coast and Geodetic Survey gives permission to state that while these pages are going through the press a decomposition by Pourtales' method of a year's continuous observations by the survey at Kadiak Island, Alaska, in progress at this Office, shows that the period of the diurnal inequality wave at that station is within a few seconds of a sidereal day. For the discussion in full see the Superintendent's Reports (probably 1887).

TABLE XIX.—*Height of the solar diurnal tide.*

Date.		Moon's declination.	Sun's declination.	Height. H. W.	Height. L. W.	Date.		Moon's declination.	Sun's declination.	Height. H. W.	Height. L. W.
1881.		°	°	*Inches.*	*Inches.*	1882.		°	°	*Inches.*	*Inches.*
Aug.	26	+2.5	+10.6	+0.7	−2.0	Mar.	5	+3.0	6.3	1.3	0.7
	27	−2.2	10.2	0.3	2.0		6	−1.4	− 5.9	+1.5	−0.5
Sept.	8	−3.8	5.8	2.0	3.5		19	−0.8	− 0.8	+1.7	−1.5
	9	+1.9	5.5	1.5	2.5		20	+4.7	− 0.4	0.5	−1.5
	22	+3.7	0.5	+0.3	1.3	Apr.	1	+4.1	+ 4.3	0.0	+0.3
	23	−0.9	+ 0.1	−0.3	1.5		2	−0.2	4.7	0.0	+0.5
Oct.	6	−0.4	− 5.0	+0.3	4.5		15	−2.8	9.5	3.5	−3.5
	7	+5.1	5.4	0.3	5.0		16	+2.5	9.9	3.7	3.3
	20	+0.5	10.2	1.7	3.5		29	+1.0	14.3	2.0	2.3
	21	−4.2	10.6	2.3	3.3		30	−3.3	14.6	2.3	3.3
Nov.	2	−2.0	14.6	3.3	5.5	May	12	−4.2	18.0	2.7	3.3
	3	+3.3	15.0	3.5	4.0		13	+0.9	18.2	2.7	3.3
	16	+2.0	18.7	3.7	4.5		26	+2.4	21.0	2.3	3.0
	17	−2.6	18.9	3.3	3.7		27	−1.9	21.2	2.7	2.7
	29	−3.2	21.4	3.3	3.7	June	9	−0.3	22.9	3.0	4.3
	30	+2.1	21.6	3.0	2.5		10	+4.8	23.0	2.3	3.3
Dec.	13	+3.5	23.1	3.5	2.7		22	+3.9	23.5	4.3	4.3
	14	−1.0	23.2	3.0	2.5		23	−0.4	23.4	3.5	3.0
	26	−4.5	23.4	4.3	4.0	July	6	−1.7	22.8	3.5	3.0
	27	+0.8	23.4	4.0	3.3		7	+3.5	22.7	1.0	1.3
1882.							20	+1.1	20.8	1.5	2.5
Jan.	10	+0.5	22.0	1.7	1.3		21	−3.2	20.6	1.3	2.0
	11	−3.9	21.9	3.0	2.3	Aug.	2	−3.6	17.9	1.7	2.5
	23	−1.2	19.6	3.0	3.0		3	+1.8	17.7	1.0	1.5
	24	+4.3	19.3	4.0	1.7		16	+2.4	14.0	4.3	3.5
Feb.	6	+1.9	15.8	2.7	1.3		17	−1.9	+13.6	+3.3	−3.5
	7	−2.5	15.5	2.5	1.5						
	19	−3.8	11.5	2.7	2.5	Means		-------	-------	+2.25	−2.66
	20	+1.8	11.1	0.5	1.7						

Table XX shows the relation of the vanishing of the moon's declination to the vanishing of the diurnal inequality at observed high and low water. The maximum value of the inequality being only a few inches, a quantity easily masked by meteorological effects, the points of vanishing are more or less indeterminate. The means of groups are, however, entitled to confidence. It appears from this table that the diurnal inequality of the high waters vanishes $2^d\ 22^h$ after, that of the low waters $1^d\ 08^h$ before the vanishing of the moon's declination, and hence, that the inequality of low water vanishes $4^d\ 06^h$ earlier than the inequality of high water. There seems to be no relation to the season of the year in the magnitude of the interval between the vanishing of the diurnal inequality of high and low water, respectively, the grouping of equinoctial and solstitial values giving the following results: Spring equinox $4^d\ 12^h$, summer solstice $4^d\ 05^h$, fall equinox $4^d\ 08^h$, winter solstice $4^d\ 05^h$; or, equinoxes $4^d\ 10^h$, solstices $4^d\ 05^h$—the difference being insignificant.

TABLE XX.- *Relation of the times of vanishing of the diurnal tide at observed high and low water to the times of vanishing of the moon's declination.*

Date.	Lunar declination zero. a		Diurnal tide zero. High water. β		Diurnal tide zero. Low water. γ		$\beta-a$		$\gamma-a$		$\beta-\gamma$	
1881.	d.	h.	d.	h.	d.	h.	d.	h.	d.	h.	d.	h.
August	26	01	27	22	20	16	+1	21	−5	09	+7	06
September	8	04	10	06	7	16	+2	02	−0	12	+2	14
Do	22	07	25	12	19	20	+3	05	−2	11	+5	16
October	5	14	7	16	4	16	+2	02	−0	22	+3	00
Do	19	14	21	10	16	23	+1	20	−2	15	+4	11
Do	32	21	34	00	30	14	+1	03	−2	07	+3	10
November	15	22	18	20	14	06	+2	22	−1	16	+4	14
Do	29	02	31	16	28	08	+2	14	−0	18	+3	08
December	13	07	16	22	10	04	+3	15	−3	03	+6	18
Do	26	08	30	06	26	14	+3	22	+0	06	+3	16
1882.												
January	9	15	13	16	10	12	+4	01	+0	21	+3	04
Do	22	17	26	20	24	18	+4	03	+2	01	+2	02
February	5	22	11	06	6	04	+5	08	+0	06	+5	02
Do	19	04	24	14	19	22	+5	10	+0	18	+4	16
March	5	05	8	16	4	18	+3	11	−0	11	+3	22
Do	18	15	22	16	16	10	+4	01	−2	05	+6	06
Do	32	11	34	16	28	12	+2	05	−3	23	+6	04
April	15	01	15	22	12	21	+0	21	−2	04	+3	01
Do	28	17	29	01	24	16	+0	08	−4	01	+4	09
May	12	08	13	14	11	07	+1	06	−1	01	+2	07
Do	26	01	28	02	24	00	+2	01	−2	01	+4	02
June	8	13	10	18	7	12	+2	05	−1	01	+3	06
Do	22	10	25	04	21	08	+2	18	−1	02	+3	20
July	5	19	10	04	5	19	+4	09	0	00	+4	09
Do	19	18	24	00	17	12	+4	06	−2	06	+6	12
August	2	04	7	10	3	12	+5	06	+1	08	+3	22
Do	16	01	19	12	15	00	+3	11	−1	01	+4	12
Do	29	14	35	00	29	11	+5	10	−0	03	+5	13
September	12	08	16	10	10	14	+4	02	−1	18	+5	20
Do	26	01	29	14	25	00	+3	13	−1	01	+4	14
October	9	13	12	11	8	22	+2	22	−0	15	+3	13
Do	23	11	22	11	21	16	−1	00	−1	19	+0	19
November	5	20	7	01	3	02	+1	05	−2	18	+3	23
Do	19	19	21	09	17	20	+1	14	−1	23	+3	13
Do	33	04	35	06	30	02	+2	02	−3	02	+5	04
December	17	01	20	00	16	04	+2	23	−0	21	+3	20
Do	30	13	34	08	29	20	+3	19	−0	17	+4	12
1883.												
January	13	08	19	08	13	10	+6	00	+0	02	+5	22
Do	26	22	31	24	26	20	+5	02	−0	02	+5	04
February	9	17	14	20	10	04	+5	03	+0	11	+4	16
Do	23	06	27	12	21	20	+4	06	−1	10	+5	16
March	9	03	13	16	9	00	+4	13	−0	03	+4	16
Do	22	13	24	16	19	17	+2	03	−2	20	+4	23
April	5	14	6	10	4	14	+0	20	−1	00	+1	20
Do	18	18	19	12	15	08	+0	18	−3	10	+4	04
May	3	00	3	12	1	04	+0	12	−1	20	+2	08
Do	16	01	17	05	13	12	+1	04	−2	13	+3	17
Do	30	07	32	02	28	22	+1	19	−1	09	+3	04
June	12	09	15	00	9	23	+2	15	−2	10	+5	01
Do	26	13	29	22	26	02	+3	09	−0	11	+3	20
							+2	22	−1	08	+4	06

The non-simultaneous vanishing of the diurnal inequality of high and low water has been remarked at various places, both within and without the Arctic circle. Of the former places we may mention Port Foulke, Port Leopold, and Polaris Bay. At all three of these places also the inequality for low water vanishes *before* the declination of the moon. The explanations offered by philosophers do not seem to be sufficient. At Port Leopold* the interval by which the vanishing of the

*Philosophical Transactions, vol. 153 (anno 1863), Part I: On the Tides of the Arctic Seas. By the Rev. Samuel Haughton, M. A., F. R. S., Fellow of Trinity College, Dublin. Part I: On the Diurnal Tides of Port Leopold, North Somerset.

inequality of low water preceded the vanishing of the inequality of high water was a maximum at the solstices and a minimum at the equinoxes, and Mr. Haughton, in his discussion of the observations, has shown that this fact accords with what might be expected from tidal theory. No such periodicity is, however, observable in the like interval at Fort Conger.

In view of the fact that the tide causing the diurnal inequality at Fort Conger comes round once in a sidereal instead of once in a lunar day, and that the same thing seems to have place at Port Foulke, Van Rensselaer Harbor, and Polaris Bay, and also because the vanishing of the diurnal inequality at Fort Conger fails to conform to accepted theories, it is conceived that an attempt to analyze this inequality by recourse to a few very simple considerations and to furnish a rational explanation of some of its salient phenomena, whether wholly successful or not, will be deemed neither presumptuous nor irrelevant.

If we number the successive high waters as they arrive at any station where diurnal inequality exists, 1, 2, 3, etc., denote odd numbers by one dash, even numbers by two dashes, and write H for the higher, h for the lower of two successive high waters, then we shall have by observation a series like the following:

$$H' \; h'' \; H' \; h'' \quad . \quad . \quad . \quad h' \; H'' \; h' \; H'',$$

there being a daily alternation of higher and lower high waters, with a reversal every half declination month, that is, if at any time the odd-numbered tides are the higher, then the even numbered will be the higher a fortnight later. The fortnightly reversal is accomplished gradually, and every declination month shows a steady progress through all the phases: odd tides at greatest height above even tides, equality, even tides at greatest height above odd tides, equality.*

This fortnightly reversal or gradual transference of superiority from odd to even, from even to odd high tides, may be conceived of as marking the progress of a wave superimposed upon the lunar semi-diurnal wave divested of diurnal inequality (which call the lunar semi-diurnal), and moving relatively to the latter so as either to gain or to lose a mean lunar day in a mean tropical or declination month.

Let a = a mean tropical month,
b = a mean lunar day,
s = the mean apparent rate of motion of the sun,
v = the speed of the superimposed lunar diurnal inequality wave,
μ = the height of the latter wave,

then

$\frac{a}{b}$ = the number of mean lunar days in a mean tropical month,

$\frac{a}{b} \pm 1$ = the number of times that the lunar diurnal inequality wave comes round during a mean tropical month,

$\frac{2s}{b}$ = the speed of the lunar semi-diurnal wave;

we have, then,

$$v : \frac{2s}{b} :: \frac{a}{b} \pm 1 : \frac{2a}{b} \text{ whence } v = s\left(\frac{1}{b} \pm \frac{1}{a}\right)$$

Putting $2\pi = 360°$

$$v = 2\pi \left(\frac{1}{b} \pm \frac{1}{a}\right) \text{ per mean solar day,}$$

$$= 15° \left(\frac{1}{b} \pm \frac{1}{a}\right) \text{ per mean solar hour,}$$

$$= 2\pi b\left(\frac{1}{b} \pm \frac{1}{a}\right) = 2\pi\left(\frac{a \pm b}{a}\right) \text{ per mean lunar day,}$$

and, expressing t in mean lunar days, we have

$$\mu = h_1 \sin\left\{2\pi\left(\frac{a+b}{a} \cdot t + \varepsilon_1\right)\right\} + h_2 \sin 2\left\{2\pi\left(\frac{a+b}{a} \cdot t + \varepsilon_2\right)\right\} + h_3 \sin 3\left\{2\pi\left(\frac{a+b}{a} \cdot t + \varepsilon_3\right)\right\} + \text{etc.}$$

$$\mu_1 = k_1 \sin\left\{2\pi\left(\frac{a-b}{a} \cdot t + \eta_1\right)\right\} + k_2 \sin 2\left\{2\pi\left(\frac{a-b}{a} \cdot t + \eta_2\right)\right\} + k_3 \sin 3\left\{2\pi\left(\frac{a-b}{a} \cdot t + \eta_3\right)\right\} + \text{etc.}$$

* This phenomenon must be distinguished from the semi-mensual inequality, whereby the odd and even tides increase and decrease together, the complete cycle being a synodic month, without materially altering the *relative* height of consecutive tides.

for the most general expression of the two waves contributed by variations in lunar declination to the production of diurnal inequality in the lunar semi-diurnal high and low waters. μ out-runs the moon, gaining a lunar day in a tropical month; μ_1 is out-run by the moon, losing a lunar day in a tropical month.

If m be any integer, n any positive integer, and t vanish for some lunar semi-diurnal high water, then

$$\mu' = \sum_{n=0}^{n=\infty} p_{2n+1} \sin (2n+1) \left\{ 2\pi \left(\frac{a+b}{a} \cdot t + \frac{1}{4(2n+1)} \right) \right\}$$

$$\mu_1' = \sum_{n=0}^{n=\infty} p_{2n+1} \sin (2n+1) \left\{ 2\pi \left(\frac{a-b}{a} \cdot t + \frac{1}{4(2n+1)} \right) \right\}$$

$$\mu'' = \sum_{n=0}^{n=\infty} q_{2n+1} \sin (2n+1) \left\{ 2\pi \left(\frac{a+b}{a} \cdot t + \frac{1}{4(2n+1)} - \frac{a+b}{a} \cdot \frac{2m+1}{4} \right) \right\}$$

$$\mu_1'' = \sum_{n=0}^{n=\infty} q_{2n+1} \sin (2n+1) \left\{ 2\pi \left(\frac{a-b}{a} \cdot t + \frac{1}{4(2n+1)} - \frac{a-b}{a} \cdot \frac{2m+1}{4} \right) \right\}$$

are such special cases of μ and μ_1 that μ' and μ_1' taken together will cause any designated diurnal inequality (subject to a fortnightly reversal) in lunar semi-diurnal high waters without affecting low waters, and, *vice versa*, μ'' and μ_1'' will produce any required diurnal inequality in lunar semi-diurnal low waters without affecting high waters; and if μ', μ_1', μ'', μ_1'' coexist, the diurnal inequality will vanish for low water $\frac{2m+1}{4}$ lunar days later than for high water. μ' and μ'' together are not more general than μ, nor μ_1' and μ_1'' together more general than μ_1. Hence μ and μ_1 would account for any designated diurnal inequality in lunar semi-diurnal high and low waters, subject to the one condition of completing its cycle in a tropical month.

If the variations in lunar declination cause a diurnal inequality in the lunar semi-diurnal high and low waters, resolvable into the two superimposed waves μ and μ_1, so the variations in solar declination will cause a diurnal inequality in the solar semi-diurnal high and low waters, resolvable by the preceding method into two other superimposed waves. A reversal of the solar diurnal inequality will occur twice each mean tropical year, and the phenomenon may be conceived of as due to a wave superimposed upon the solar semi-diurnal wave stripped of diurnal inequality (which call the solar semi-diurnal), which moves relatively to the latter in such wise as either to gain or to lose a mean solar day in a mean tropical year.

Put c=a mean tropical or declination year,

d=a mean solar day,

u=the speed of the superimposed solar diurnal inequality wave,

σ=the height of the latter wave,

then

$\frac{c}{d}$=the number of mean solar days in a mean tropical year,

$\frac{c}{d}\pm 1$=the number of times that the solar diurnal inequality wave comes round during a mean tropical year;

whence we have

$$u : s :: \frac{c}{d} \pm 1 : \frac{c}{d}$$

or

$$u = 2\pi \left(\frac{c \pm d}{c} \right) \text{ per mean solar day,}$$

$$= 15^\circ \left(\frac{c \pm d}{c} \right) \text{ per mean solar hour,}$$

$$= 2\pi \left(\frac{c \pm d}{c} \right) . b \text{ per mean lunar day,}$$

and expressing t in mean solar days, we shall have

$$\sigma = p_1 \sin \left\{ 2\pi \left(\frac{c+d}{c} \cdot t + \theta_1 \right) \right\} + p_2 \sin 2 \left\{ 2\pi \left(\frac{c+d}{c} \cdot t + \theta_2 \right) \right\} + p_3 \sin 3 \left\{ 2\pi \left(\frac{c+d}{c} \cdot t + \theta_3 \right) \right\} + \text{etc.}$$

$$\sigma_1 = q_1 \sin \left\{ 2\pi \left(\frac{c-d}{c} \cdot t + \vartheta_1 \right) \right\} + q_2 \sin 2 \left\{ 2\pi \left(\frac{c-d}{c} \cdot t + \vartheta_2 \right) \right\} + q_3 \sin 3 \left\{ 2\pi \left(\frac{c-d}{c} \cdot t + \vartheta_3 \right) \right\} + \text{etc.}$$

as the most general expression for the two waves contributed by variations in the solar declination to the production of diurnal inequality in the solar semi-diurnal high and low waters.

Let M be the lunar and S the solar wave, each divested of diurnal inequality. Then the observed wave is the resultant of the six components, μ, M, μ_1, σ, S, σ_1. M and S combine to form the observed wave divested of diurnal inequality (represented in Plate I by the dotted line); μ, μ_1, σ, σ_1 combine to form the wave causing diurnal inequality in the observed wave (represented in Plate I by the continuous line); and, finally, these two compound waves unite to produce the observed wave (represented in Plate I by the line and dot alternating).

With the astronomical data

$a=27.32156$ mean solar days, $b=1.035050$ mean solar days, $c=365.2422$ mean solar days

we obtain the velocities of propagation and periods of the six components, as follows:

Component.	Speed per mean solar hour.	Period in mean solar time.
	° °	d h m s
μ	$15\times\left(\frac{1}{b}+\frac{1}{a}\right)=15.04107$	0.9972695 = 23 56 04.08
M	$15\times\frac{1}{b}=14.49205$	1.035050 = 24 50 28.3
μ_1	$15\times\left(\frac{1}{b}-\frac{1}{a}\right)=13.94304$	1.075806 = 25 49 09.6
σ	$15\times\left(1+\frac{1}{c}\right)=15.04107$	0.9972695 = 23 56 04.08
S	5	1 = 24
σ_1	$15\times\left(1-\frac{1}{c}\right)=14.95893$	1.002745 = 24 03 57.2

The periods of μ and σ, the one due to lunar, the other to solar action, are necessarily the same,* that is, a wave that out-runs the sun a day in a tropical year out-runs the moon a lunar day in a tropical month, and *vice versa*. Hence μ and σ do not admit of separation by observation, but move as a single wave, of which the period is *a sidereal day*. This, taken in connection with the results of the graphic analysis by Pourtales's method at Fort Conger, Polaris Bay, Van Rensselaer Harbor, and Port Foulke, would indicate that from Smith Sound to Robeson Channel the sum of μ and σ preponderate over either μ_1 or σ_1 to such an extent as to fix their speed upon the total diurnal inequality wave, the existence of μ_1 and σ_1 giving rise to, and being evidenced by, such inequalities in time and height as appear in the results at Fort Conger. (See fig. 1, Plate II.)

μ and σ cause a fortnightly reversal in the observed diurnal inequality, since they gain on the moon a lunar day in a tropical month. μ_1 will also tend to cause a fortnightly reversal, since it loses on the moon a lunar day in a tropical month; but whether it will conspire with or oppose μ and σ in this respect will depend upon the relations of their epochs. σ_1 of itself would cause a reversal every sixteen days, since it gains on the moon a lunar day in 32.1284† mean solar days; hence its effect at Fort Conger is to cause an inequality in the times of vanishing of the observed diurnal inequality.

The relative influences of the moon and sun upon the diurnal inequality can not be determined from the sidereal waves μ and σ, since these do not admit of separation. This ratio is, however, determinable from μ_1 and σ_1.

To obtain the amplitude and epoch of any one of these component waves it is only necessary to group the observations according to the period of the component sought, superposing its like phases throughout the series and taking the mean. The other components are thus eliminated, if the series be long enough, by the progressive superposition of their unlike phases. By an application of Fourier's Theorem the component picked out by this process can then be resolved into a series consisting of a principal term and its harmonies. Whether a particular component exists, and with what amplitude and epoch, must be determined from the observations.

Pourtales's graphical analysis demonstrates to the eye the existence of the wave of sidereal speed at Fort Conger, Polaris Bay, Van Rensselaer Harbor, and Port Foulke. μ_1 and σ_1 must be found by the general method of the superposition of like phases. Now this method is the one employed in the Harmonic Analysis of the Tides, and it has been applied at a large

*A wave gaining on a celestial body one revolution while that body loses a revolution relatively to the stars must have sidereal speed.

† $\frac{bc}{bc-b-c}$

number of stations in various quarters of the globe.* At almost all of these stations the wave of sidereal speed is sufficiently large relatively to the other diurnal waves to impress its character upon the sum of all. The diurnal inequality wave at these stations will have sidereal speed; that is, its high water will occur once each sidereal day, and such component waves as μ_1 and σ_1 will simply give rise to inequalities in its time and height.

Viewed in the light of the preceding analysis there is nothing surprising in the non-simultaneous vanishing of the high and low water diurnal inequalities; indeed, it would be extraordinary were they to vanish together, and it is quite safe to assert that they will do so at a very small proportion of tidal stations either within or without the Arctic circle. Mr. Haughton's researches† have shown that at nine stations on the coast of Ireland the diurnal inequality vanishes on an average $1^{d}\ 3\frac{1}{2}^{h}$ earlier for low than for high water. At only one of the stations do the inequalities vanish together.

DETERMINATION OF THE HALF-TIDE LEVEL.

The half-tide level is best defined by a statement of the method of its derivation. In the appended example the third column contains the observed high and low waters arranged in the order of time; the entries in the fourth column are derived from the third by taking the means of successive pairs of alternate numbers; the fifth column is derived from the fourth exactly as the fourth is derived from the third; the entries in the sixth column are the half-tide level, and are obtained by taking the mean of the entries on the same line in the fourth and fifth columns; the seventh column contains the half-tide level for each day, found by taking the mean of all the entries for the day in the sixth column. It will be seen that the half-tide level is free of the diurnal and semi-mensual inequalities. For ordinary purposes it may be taken as the sea level, and its mean for a series as the mean sea level, but in fine work it must be distinguished from the level obtained by taking the mean of say half-hourly ordinates. The latter is a level such that the sectional area of water above it is equal to the sectional area of deficiency below it, a condition that does not necessarily hold for the half-tide level.

Date.	Phases of tide.	Reading of gauge.	Alternate means.		Half-tide level.	Daily half-tide level.
1881.		*Inches.*	*Inches.*	*Inches.*	*Inches.*	*Inches.*
Aug. 20	L.	37.9				49.3
	H.	58.7	36.3			
	L.	34.6	63.5	35.2	49.3	
	H.	68.2	34.1	64.4	49.3	
21	L.	33.5	65.3	33.7	49.5	49.6
	H.	62.4	33.2	67.1	50.1	
	L.	32.9	68.9	30.7	49.8	
	H.	75.3	28.1	70.1	49.1	
22	L.	23.3	71.2	26.3	48.7	48.5
	H.	67.1	24.5	71.3	47.9	
	L.	25.6	71.5	25.1	48.3	
	H.	76.0	25.7	72.5	49.1	
23	L.	25.7	73.4			
		70.8				

The daily half-tide level has been entered in the ninth column of Table V.

EFFECT UPON THE HALF-TIDE LEVEL OF VARIATIONS IN THE ATMOSPHERIC PRESSURE.

The mean reading of the barometer for the period covered by the tidal series was found to be 29.88 inches. The computed daily half-tide levels for each month were then taken from Table V with the mean reading of the barometer for the same day and distributed into two classes according as the barometric reading was less or greater than the mean. The results are presented in Table XXI:

*For a large collection of results, see paper by Mr. G. H. Darwin, Proc. Roy. Soc., vol. 39, pp. 135–207. For an excellent account of the Harmonic Analysis of the Tides, with formulæ and tables, see Mr. Darwin's report to the Brit. Asso. at its Southport meeting, 1883. In these papers K corresponds to μ and σ, O to μ_1, and P to σ_1.

†See Phil. Trans., 1863, p. 249.

TABLE XXI.—*Effect upon the half-tide level of variations in the atmospheric pressure.*

Month.	Barometer 29.8 inches and less.					Barometer 29.9 inches and greater.				
	No. of observations.	Sums.		Means.		No. of observations.	Sums.		Means.	
		Half tide.	Barometer.	Half tide.	Barometer.		Half tide.	Barometer.	Half tide.	Barometer.
		Inches.	*Inches.*	*Inches.*	*Inches.*		*Inches.*	*Inches.*	*Inches.*	*Inches.*
January	34	1555.9	1005.8	45.76	29.58	28	1176.8	841.2	42.03	30.04
February	40	1858.1	1180.7	46.45	29.52	16	632.7	481.1	39.54	30.07
March	27	1248.5	799.1	46.24	29.60	35	1345.9	1055.0	38.45	30.14
April	14	617.6	415.6	44.11	29.69	46	1829.3	1390.6	39.77	30.23
May	17	793.0	505.3	46.65	29.72	45	1747.1	1358.4	38.82	30.19
June	23	1112.5	682.2	48.37	29.66	37	1654.4	1110.6	44.71	30.02
July	23	1049.3	681.1	45.62	29.61	8	323.6	240.2	40.45	30.03
August	23	1114.4	683.6	48.45	29.72	20	931.4	599.1	46.57	29.95
September	37	1823.4	1096.3	49.28	29.63	23	1037.0	690.3	45.09	30.01
October	29	1417.0	859.6	48.86	29.64	33	1413.2	993.9	42.82	30.12
November	29	1370.1	858.1	47.24	29.59	31	1267.4	933.1	40.88	30.10
December	24	1071.1	710.8	44.63	29.62	38	1540.7	1144.8	40.54	30.13

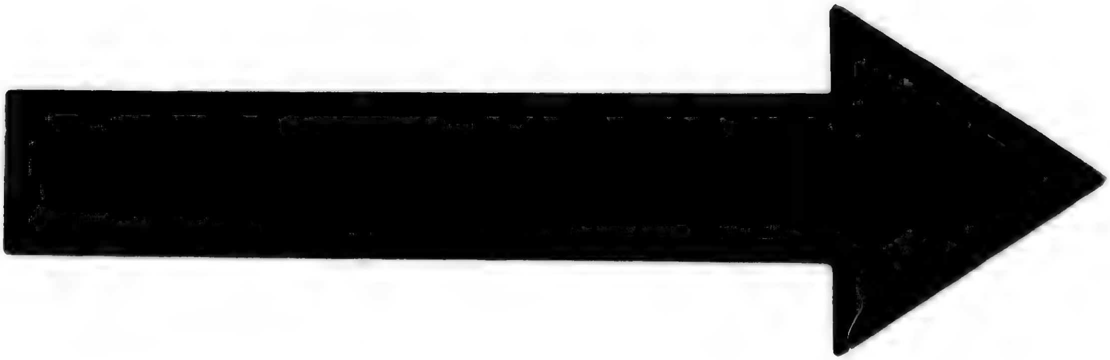
From which we derive Table XXII:

TABLE XXII.—*Ratio of variations in the half-tide level to corresponding variations in atmospheric pressure.*

Month.	No. of observations.	Variation in height of barometer.	Variation in half-tide level.	Ratio.
		Inches.	*Inches.*	
January	62	+0.46	−3.73	−8.1
February	56	0.55	6.91	12.5
March	62	0.54	7.79	14.4
April	60	0.54	4.34	8.0
May	62	0.47	7.83	16.7
June	60	0.36	3.66	10.2
July	31	0.42	5.17	12.3
August	43	0.23	1.88	8.2
September	60	0.38	4.19	11.1
October	62	0.48	6.04	12.6
November	60	0.51	6.36	12.5
December	62	+0.51	−4.09	−8.0
Sums	....	+5.45	−61.99	....

We obtain from the whole series, extending over 680 days, $-61.99 \div 5.45 = -11.4$ for the ratio of the variation of the sea level to the variation in the mercurial column. This effect is partly direct, due to transference of sea water from points of greater to points of less superincumbent pressure; partly indirect, due to the mechanical action upon the surface of the sea of winds set in motion by differences of local pressure; and these causes will usually conspire. Other things being equal a greater effect upon the sea level will be attained: first, the nearer to the station the point of maximum or minimum pressure has place; second, the more restricted the area over which the barometric variation extends; third, the more persistent the barometric variation in the same direction; and, fourth, the more ample the means of ingress and egress of waters to and from the station. The weight ratio of sea water and mercury is about 13.2. Considering all the circumstances of the case, and the little likelihood of the simultaneous occurrence of all the conditions for a maximum effect, it does not seem that the above ratio, 11.4, is too small. On the contrary it would probably be reduced by the discussion of a longer series.

The winds at Fort Conger during the progress of tidal observations were usually light and the sea was exposed to their action for only a small part of the year. A careful comparison of the half-tide level with the direction and force of the wind brought out no very important results. Southwest and west winds seem to have had an elevating, northwest a depressing effect upon the half-tide level, which fact, so far as it goes, would indicate that the effect was local and mainly restricted to Discovery Harbor.



TIDAL OBSERVATIONS AT SUBSIDIARY STATIONS ON THE COASTS OF GREENLAND AND GRINNELL LAND.

To further the solution of tidal problems in this part of the Arctic seas, more especially to determine, if possible, whether the tides in Franklin Bay and Robeson Channel enter those immediate waters from the south or from the north, the observations at Fort Conger were supplemented by short series at outlying stations along the coasts of Greenland and Grinnell Land simultaneous with the progress of the series at the principal station. These subordinate series of observations were made upon staffs securely fastened to the shore ice-wall in the tidal crack and presumably absolutely fixed, a presumption not rebutted by the observations themselves, except perhaps those at Black Horn Cliffs, where the inconsiderable range of the tide might suggest a rising and falling of the shore ice carrying the staff. This matter will be recurred to further on in considering the co-tidal lines of this region. At all the subordinate stations the readings were made at short intervals—usually one minute—about the times of high and low water, with simultaneous readings of like frequency at Fort Conger, so that the times of these phases were determined at both ends of the line with all practicable precision. All times were noted in Washington mean time. The record of the high and low waters so observed are given in Table XXIII. The last column contains the computed interval by which high or low water at the station precedes the like phase at Fort Conger.

TABLE XXIII.—*Record of tidal observations upon fixed gauges at subsidiary stations.*

Subsidiary station.	Latitude.	Longitude.	Date.	Time.	Height.	Fort Conger.		Station less Fort Conger.
						Time.	Height.	
	° ′	° ′	1883.	*h. m.*	*Inches.*	*h. m.*	*Inches.*	*m.*
Cape Cracroft	81 22	64 30	May 30	4 43	53.7	4 52	73.2	− 9
				10 51	4.9	11 02	28.2	−11
				17 23	44.7	17 33	64.9	−10
				23 47	10.4	23 38	32.2	+ 9
			31	5 45	50.3	5 53	69.4	− 8
				12 21	1.1	12 10	25.3	+11
				18 59	45.0	19 01	64.5	− 2
			June 1	1 03	4.8	1 10	27.9	− 7
Cape Baird	81 32	64 30	May 7	10 42	75.5	11 10	71.9	−28
				16 53	2.2	17 13	−10.4	−20
				23 22	80.4	23 28	79.2	− 6
			8	5 32	8.2	5 37	− 4.6	− 5
				11 36	73.8	11 48	71.6	−12
				17 45	2.3	17 56	− 9.6	−11
			9	0 12	77.9	0 20	77.1	− 8
				6 30	9.0	6 32	− 2.7	− 2
				12 34	69.9	12 36	68.2	− 2
Distant Cape	81 42	64	May 21	22 49	85.5	22 55	80.5	− 6
			22	4 55	24.6	5 05	18.5	−10
				11 05	80.3	11 03	75.1	+ 2
				17 00	19.1	17 04	13.6	− 4
				23 20	88.6	23 22	83.6	− 2
			23	11 55	82.0	11 46	76.4	+ 9
				17 44	19.4	17 46	14.0	− 2
			24	0 02	89.0	−0 06	83.8	+ 8
				6 18	25.8	6 11	18.5	+ 7
			29	22 18	38.6	22 21	32.3	− 3
			30	4 42	78.7	4 52	73.2	−10
				17 24	69.5	17 33	64.9	− 9
				23 26	38.8	23 38	32.2	−12
			31	5 43	75.4	5 53	69.4	−10
				12 05	30.6	12 10	25.3	− 5
				18 47	70.0	19 01	64.5	−14
Cape Beechey	81 52	63	May 21	22 57	70.9	22 55	80.5	+ 2
			22	4 53	19.8	5 05	18.5	−12
				10 59	67.1	11 03	75.1	− 4
				17 06	14.8	17 04	13.6	+ 2
				23 25	74.9	23 22	83.6	+ 3
			23	5 37	23.0	5 30	20.7	+ 7
				11 38	70.2	11 46	76.4	− 8
				17 37	15.1	17 46	14.0	− 9
				23 50	75.2	23 54	83.8	− 4
Cape Sumner	81 55	60 45	Apr. 9	12 06	100.6	11 58	82.1	+ 8
				18 20	40.4	18 15	3.7	+ 5
			10	0 51	103.5	0 10	86.3	+41
Five miles SW. Repulse Harbor	82 03	59 30	Apr. 7	10 48	83.2	10 53	80.0	− 5
				17 28	30.5	17 00	− 1.5	+28
				23 31	79.9	23 05	81.1	+26
Black Horn Cliffs	82 12	57 30	Apr. 3	8 35	33.4	7 45	59.5	+50
				14 33	22.6	14 05	25.5	+28
				20 32	32.3	20 15	60.8	+17

The conclusions from Table XXIII are presented in Table XXIV, where S stands for the subsidiary station, C for Fort Conger. Since high and low water advance in shallow waters with different velocities, it was deemed best, in forming the column $S-C$ for use in tracing the progress of the tidal wave, not to confound the low with the high water residuals, save at the three most northern stations, where the fewness of the observations made it advisable to combine them. The last column gives the ratio of the range of the tide at the subordinate and principal station.

TABLE XXIV.—*Times of high and low water and range of the tide at stations on the coasts of Greenland and Grinnell Land relatively to the corresponding times and ranges at Fort Conger.*

Subsidiary station.	Latitude.	Longitude.	Station less Fort Conger.					Range of tide.		
			High water.		Low water.		Adopted. $S-C$	Subsidiary station.	Fort Conger.	$S \div C$
			Time.	Number obs'ns.	Time.	Number obs'ns.				
	° ′	° ′	*m.*		*m.*		*m.*	*Inches.*	*Inches.*	
Cape Cracroft	81 22	64 30	− 7.2	4	+ 0.5	4	− 7	43.1	39.6	1.09
Cape Baird	81 32	64 30	−11.2	5	− 9.5	4	−11	70.1	80.4	0.87
Distant Cape	81 42	64	− 3.5	9	− 4.1	7	− 4	53.0	53.8	0.99
Cape Beechey	81 52	63	− 2.2	5	− 3.0	4	− 3	53.5	63.2	0.85
Cape Sumner	81 55	60 45	+24.5	2	+ 5	1	+18	61.6	80.5	0.77
5 miles SW. of Repulse Harbor	82 03	59 30	+10.5	2	+28	1	+16	51.0	82.0	0.62
Black Horn Cliffs	82 12	57 30	+33.5	2	+28	1	+32	10.3	34.6	0.30

TIDAL OBSERVATION AT THE HEAD OF GREELY FIORD.

The following is an extract from Sergeant Brainard's journal, under date of May 13, 1883, the day Lockwood and Brainard reached the head of Greely Fiord:

> I examined the shore carefully to ascertain what I could about the tide, but very little was gathered on which a theory could be based or an opinion given. The action of the tide is apparent, but the range is very small. The ice-foot bore evidences of having been flooded recently. The fiord was discovered at $5^h\ 15^m$ a. m., and the tide at that time had just begun to ebb. Making due allowance for the slight fall, I considered 4 a. m. as the approximate time of high water.

This would make high water at the head of Greely Fiord 45^m later than at Fort Conger, where it occurred on the same day at $3^h\ 15^m$ a. m.

TIDAL OBSERVATIONS DURING THE RETREAT SOUTHWARD FROM FORT CONGER.

Several observations of the time of high and low water, the direction of ebb and flow tidal currents, and estimates of the range of the tide were made after the party abandoned Fort Conger. They are brought together in Table XXV, and the computed establishments in Table XXVI. The establishments have been corrected for the phase of the moon, using the results at Fort Conger as a basis, and the mean establishments thus derived are also given.

TABLE XXV.—*Record of high and low waters observed between Capes Baird and Sabine.*

Locality.	Latitude.	Longitude.	Date.	Washington mean time.		Remarks.
				High water.	Low water.	
	° ′	° ′	1883.	h. m.	h. m.	
Between Carl Ritter Bay and Cape Lawrence	80 44	68	Aug. 15	20 45	14 40	
			Aug. 18	....	4 43	
			Aug. 18	....	16 55	
11 miles NE. of Cape Lawrence	80 28	68 18	Aug. 19	....	5 05	Tides evidently from 12 to 15 feet in the springs, ebbing tide moving the ice rapidly to the north.
7 miles NE. of Cape Lawrence	80 25	68 35	Aug. 19	23 30	....	
1 mile W.SW. of Cape Lawrence	80 21	69 20	Aug. 20	12 00	18 13	Range nearly 14 feet.
2 miles S. of Cape Norton Shaw	79 53	71.1	Aug. 22	....	19 35	
			Aug. 23	1 45	....	
			Aug. 23	14 15	....	
Cape John Barrow	79 49	71.1	Aug. 24	....	*3 40	
			Aug. 25	3 35	....	
Inside Joy Point, about 3 miles NE. of Cape Louis Napoleon.	79 41	71.6	Aug. 26	5 15	....	
Eskimo Point, near Le Conte Sound, N. side Baird Inlet.	78 34	75	Oct. 2	11 40	....	Watch fast 3 or 4 minutes.
Camp Clay, about 4 miles NW. of Cape Sabine	78 47	74 13	Nov. 16	12 05	....	Watch fast 5 to 6 minutes. Highest tide between October 15, 1883, and June 22, 1884.

*A high water, and so taken in the reduction.

TABLE XXVI.—*Mean establishments of points of observation, Capes Baird to Sabine.*

Locality.	Latitude.	Longitude.	Date.	Lunitidal interval.		Correction for phase.		Mean establishment.	
				High water.	Low water.	High water.	Low water.	High water.	Low water.
	° ′	° ′	1883.	h. m.	h. m.	m.	m.	h. m.	h. m.
Between Carl Ritter Bay and Cape Lawrence.	80 44	68	Aug. 15	11 55	18 17	−55	−58	11 00	17 19
			Aug. 18	....	18 06	....	−37	....	17 29
			Aug. 18	....	17 52	....	−27	....	17 25
11 miles NE. of Cape Lawrence	80 28	68 18	Aug. 19	....	17 34	....	−21	....	17 13
7 miles NE. of Cape Lawrence	80 25	68 35	Aug. 19	11 05	....	− 7	....	10 58	....
1 mile W.SW. of Cape Lawrence	80 21	69 20	Aug. 20	11 06	17 19	+ 3	+ 7	11 09	17 26
2 miles S. of Cape Norton Shaw	79 53	71.1	Aug. 22	....	16 51	....	+40	....	17 31
			Aug. 23	10 33	....	+43	....	11 16	....
			Aug. 23	10 36	....	+48	....	11 24	....
Cape John Barrow	79 49	71.1	Aug. 24	11 33	....	+51	....	12 24	....
			Aug. 25	10 32	....	+57	....	11 29	....
Inside Joy Point, about 3 miles NE. of Cape Louis Napoleon.	79 41	71.6	Aug. 26	11 09	....	+37	....	11 46	....
Eskimo Point, near Le Conte Sound, N. side Baird Inlet.	78 34	75	Oct. 2	11 20	....	−18	....	11 02	....
Camp Clay, about 4 miles NW. of Cape Sabine.	78 47	74 13	Nov. 16	10 54	....	00	....	10 54	....

HARMONIC ANALYSIS OF THE FIRST YEAR'S OBSERVATIONS.

For this analysis the hourly observations from August 20, 1881, to July 1, 1882, contained in Table IV, were laid down upon profile paper to convenient scale and a curve drawn in such wise as to eliminate suspiciously large irregularities. The series was then continued from July 1 to August 25, 1882, by laying down the observed high and low waters of Table V and drawing in the curve with a free hand, conforming as nearly as practicable to the sweep of the curve afforded by the hourly readings. The entire curve, extending from August 20, 1881, to August 25, 1882, was then read off at intervals of half a mean solar hour, and these ordinates were subjected to the analysis. The results for eleven of the principal components are presented in Table XXVII:

TABLE XXVII.—*Showing the amplitudes and epochs of the principal harmonic components of the tide at Fort Conger.*

Component.	Speed.	H	κ	Mean level.	Component.	Speed.	H	κ	Mean level.
	°	*Inches.*	°	*Inches.*		°	*Inches.*	°	*Inches.*
S_1	15.0000000	0.24	66	44.19	O_1	13.9430356	1.10	199	44.19
S_2	30.0000000	10.67	19	...	P_1	14.9589314	0.92	233	44.21
S_3	45.0000000	0.14	7	...	Q_1	13.3986609	0.03	102	44.09
M_1	14.4920521	0.11	276	44.18	L_2	29.5284788	0.79	18	44.04
M_2	28.9841042	23.55	335	...	N_2	28.4397296	4.53	309	44.02
M_3	43.4761563	0.38	235	...	ν_2	28.5125830	0.25	326	43.99
M_4	57.9682084	0.22	322	...	μ_2	27.9682084	0.52	288	44.19
K_1	15.0410686	3.36	222	44.20	*Sa*	0.0410686	2.39	208	44.09
K_2	30.0821372	3.60	17	...	*Ssa*	0.0821372	1.72	335	...

ORIGIN OF THE TIDES IN LADY FRANKLIN BAY AND THE ADJACENT WATERS.

The production of a sensible tide within the narrow seas communicating with the Atlantic through Davis Strait and with the Polar Ocean through Robeson Channel being out of the question, there are but four possible sources for the tides of those waters. They may be due to the Atlantic tides entering Davis Strait and flowing up the west coast of Greenland; or flowing up west of Spitzbergen, rounding Greenland, and entering Robeson Channel from the north; or to a tide generated in the Polar Ocean by the immediate action of the tidal forces and giving off a wave through Robeson and other channels into the west Greenland seas; or, lastly, in like manner from a Polar Ocean tide derived from the Pacific Ocean through Bering Strait.

The supposition that the Polar Ocean is materially affected by tides entering from the Pacific through a strait only about 40 miles in width and averaging not to exceed 30 fathoms in depth, with far-stretching shoal approaches on either side, is not a very probable one; but that such derivative tides should be felt so far to the eastward as the Greenland coast is a proposition not requiring refutation.

If the circumpolar area be largely occupied by land masses any considerable tidal motions in its interspersed waters must necessarily be derived from seas in lower latitudes; but even if all the unexplored portions should be free from land masses the tides originating in the Polar Ocean would still be small. For not only are the tidal forces weak near the pole, but the tidal wave would be dissipated as a free wave in waters of moderate depth. Even at a distance of 6 degrees from the pole a free wave in water of 150 fathoms depth would out-run both sun and moon, and in 600 fathoms, or less than two-thirds of a statute mile, would have more than twice their speed in longitude, a state of things that would be adverse to the production of large tidal effects.

There remain to be considered tides derived from the Atlantic Ocean. The three tables following have been prepared to exhibit the progress of the tide-wave in the Arctic seas. The co-tidal hour in the last column is the *mean solar time elapsed from the Greenwich transit of the moon to high water at the station.* To obtain Mr. Whewell's co-tidal hour these values should be diminished by a thirtieth part, that is, 0.1^h should be subtracted from every 3^h.* In making use of Table XXVI low-water were reduced to high-water establishments by subtracting $6^h\ 12^m$.

* Researches on the Tides. Sixth series. By the Rev. William Whewell, M. A., F. R. S. Phil. Trans., 1836. Part II. See p. 293. Mr. Whewell's method amounts to the substitution of lunar for solar time. He has been followed by other writers, and his and their results have been perhaps universally adopted; yet probably not one person in a thousand having occasion to use them would ever suspect that the co-tidal hour-lines are drawn $1^h\ 02^m$ apart. This substitution of a kind of time known only to astronomers was neither necessary nor convenient. To refer a tide to a lunar transit, one earlier or one later, it is only necessary to add to the lunitidal interval in the former case and subtract from it in the latter the interval between the two transits—in Mr. Whewell's example $12^h\ 24^m$. When the interval between transits is not known $12^h\ 25^m$, the mean interval, should be used.

It may be added that in Tables XXVIII–XXX the correction for longitude, or the time that the moon requires to pass from the meridian of Greenwich to the meridian of the station, is separated into the solar correction and the moon's retard on the sun simply to prevent a possible misconception as to the nature of the co-tidal hour so obtained.

TABLE XXVIII.—*Progress of the tide-wave east of Greenland.*

Name of station.	Authority.	North latitude.	Longitude west from Greenwich.	Establishment high water.		Range of tide.			Correction for longitude.	Correction for moon's retard.	Co-tidal hour of high water.
				Full and change.	Mean.	Springs.	Neaps.	Mean.			
		°	°	*h.*	*h.*	*Feet.*	*Feet.*	*Feet.*	*h.*	*h.*	*h.*
Nubarbik	(1)	63.4	42.0	6.5	6.3	......	2.0	......	+2.8	+0.1	9.2
Jan Mayen	(2)	71.0	8.5	11.6	11.3	3.7	2.2	......	0.6	0.0	11.9
Eleonoren Bay	(1)	73.4	25.1	10.7	10.5	......	......	......	1.7	0.1	12.3
Cape Broer Ruys	(1)	73.5	20.1	10.8	10.6	......	3.0	......	1.3	0.0	11.9
Jackson Island	(1)	73.9	20.0	11.0	10.8	......	3.2	......	1.3	0.0	12.2
Sabine Island	(1)	74.5	18.7	11.2	11.0	......	......	......	1.2	0.0	12.2
Little Pendulum Island	(1)	74.6	18.5	11.3	11.1	......	2.7	......	1.2	0.0	12.3
Cape Philip Broke	(1)	74.9	17.7	11.4	11.2	2.7	......	......	1.2	0.0	12.4
Cape Börgen	(1)	75.4	18.0	12.1	11.9	2.3	......	......	1.2	0.0	13.1

[1] Captain Karl Koldewey, Die zweite deutsche Nordpolarfahrt, 1869–'70, Vol. II, 1874; not accessible to the present writer. But see Sixth Supplement on the Northern and Eastern Extension of the Gulf Stream, U. S. Hydrographic Office, Washington, April, 1875, pp. 6–7; Admiralty Manual and Instructions for the Arctic Expedition, 1875, p. 666; and Die Amerikanische Nordpol-Expedition, von Emil Bessels, 8°, Leipzig.
[2] Die Oesterreichische Polar-Station Jan Mayen, 1882–'83. Beobachtungs-Ergebnisse, 1. Band.

TABLE XXIX.—*Progress of the tide-wave west of Greenland.*

Name of station.	Authority.	North latitude.	Longitude west from Greenwich.	Establishment high water.		Range of tide.			Correction for longitude.	Correction for moon's retard.	Co-tidal hour of high water.
				Full and change.	Mean.	Springs.	Neaps.	Mean.			
		° ′	° ′	*h.*	*h.*	*Feet.*	*Feet.*	*Feet.*	*h.*	*h.*	*h.*
Frederiksdal	(1)	59.9	44.5	......	2.9	9.4	4.5	......	+3.0	+0.1	6.0
Julianshaab	(2)	60.6	46.1	5.1	4.9	7	5	......	3.1	0.1	8.1
Frederikshaab	(3)	62.0	50.1	6.4	6.2	9	5	......	3.3	0.1	9.6
Godthaab	(3)	64 11	51 43.5	......	6.6	......	......	10.0	3.4	0.1	10.1
Holsteinborg Harbor	(4)	66.9	53.7	6.5	6.3	10	......	......	3.6	0.1	10.0
Whalefish Islands	(5)	69.0	53.2	8.3	8.1	7½	......	......	3.5	0.1	11.7
Godhavn	(6)	69.2	53.5	9.0	8.8	7½	......	......	3.6	0.1	12.5
Upernivik	(7)	72.8	56.1	11.0	10.8	8	......	......	3.7	0.1	14.6
Wolstenholm Sound	(8)	76.5	68.9	11.1	10.9	7½	......	......	4.6	0.2	15.7
Port Foulke	(9)	78 18	73 00	11.4	11.2	9.9	5.0	7.7	4.9	0.2	16.3
Van Rensselaer Harbor	(10)	78 37	70 53	11.9	11.7	11.1	4.7	7.9	4.7	0.2	16.6
Eskimo Point, near Le Conte Island	(11)	78.6	75.0	......	11.0	......	......	......	5.0	0.2	16.2
Camp Clay, 4 miles NW. Cape Sabine	(11)	78.8	74.2	......	10.9	......	......	......	4.9	0.2	16.0
3 miles NE. Cape Louis Napoleon	(11)	79.7	71.6	......	11.7	......	......	......	4.8	0.2	16.7
Cape John Barrow	(11)	79.8	71.1	......	11.9	......	......	......	4.7	0.2	16.8
2 miles S. Cape Norton Shaw	(11)	79.9	71.1	......	11.3	......	......	......	4.7	0.2	16.2
1 mile W. SW. Cape Lawrence	(11)	80.3	69.3	......	11.2	14 (?)	......	......	4.6	0.2	16.0
7 miles NE. Cape Lawrence	(11)	80.4	68.6	......	11.0	......	......	......	4.5	0.2	15.7
11 miles NE. Cape Lawrence	(11)	80.5	68.3	......	11.0	14 (?)	......	......	4.5	0.2	15.7
Between Carl Ritter Bay and Cape Lawrence	(11)	80.7	68.0	......	11.1	......	......	......	4.5	0.2	15.8
Cape Cracroft	(11)	81 22	64 30	......	......	......	......	......	......	......	15.9
Cape Baird	(11)	81 32	64 30	......	......	......	......	......	......	......	15.8
Thank God Harbor, Polaris Bay	(12)	81 37	61 44	......	12.3	5.4	2.0	3.9	4.1	0.1	16.5
Distant Cape	(11)	81 42	64	......	......	......	......	......	......	......	15.9
Fort Conger, Lady Franklin Bay	(13)	81 44	64 44	......	11.6	6.0	2.4	4.4	4.3	0.1	16.0
Cape Beechey	(11)	81 52	63	......	......	......	......	......	......	......	16.0
Cape Sumner	(11)	81 55	60 45	......	......	......	......	......	......	......	16.3
5 miles SW. Repulse Harbor	(11)	82 03	59 30	......	......	......	......	......	......	......	16.3
Black Horn Cliffs	(11)	82 12	57 30	......	......	......	......	......	......	......	16.5
Cape Sheridan	(14)	82 25	61 30	23.4	10.6	2.6	1.2	......	4.1	0.1	14.8
Head of Greely Fiord	(13)	......	......	......	......	......	......	......	......	......	16.8

[1] Missionary Asboe, 1863–'64; Rev. Samuel Haughton, Phil. Trans., 1866.
[2] British Admiralty Tide-Tables for 1887.
[3] Observations Internationale Polaire, 1882–'83. Expedition Danoise. Copenhague, 1886. Tome II. 1re Livraison .II. Flux et Reflux de la Mer.
[4] Captain Inglefield, 1853; C. A. Schott, Smithsonian Contributions to Knowledge, Vol. XV.
[5] Parry's Third Voyage; C. A. Schott, *ibid.*
[6] Map in Narrative of Kane's First Voyage; C. A. Schott, *ibid.*
[7] Captain Inglefield, 1854; C. A. Schott, *ibid.*
[8] C. A. Schott, *ibid.*
[9] Dr. Hayes' Observations, 1860–'61; C. A. Schott, *ibid.*
[10] Dr. Kane's Observations, 1853–'54; C. A. Schott, Smithsonian Contributions to Knowledge, Vol. XIII.
[11] Lieut. A. W. Greely, U. S. Army, 1883.
[12] U. S. Arctic Expedition, steamer *Polaris*, C. F. Hall, commanding, Vol. I.
[13] Lieut. A. W. Greely, U. S. Army, 1881–'83.
[14] Capt. Sir G. S. Nares, Voyage to the Polar Sea, 1875–'76. London, 1878, Vol. II. Appendix No. XIX by the Rev. Samuel Haughton, F. R. S.

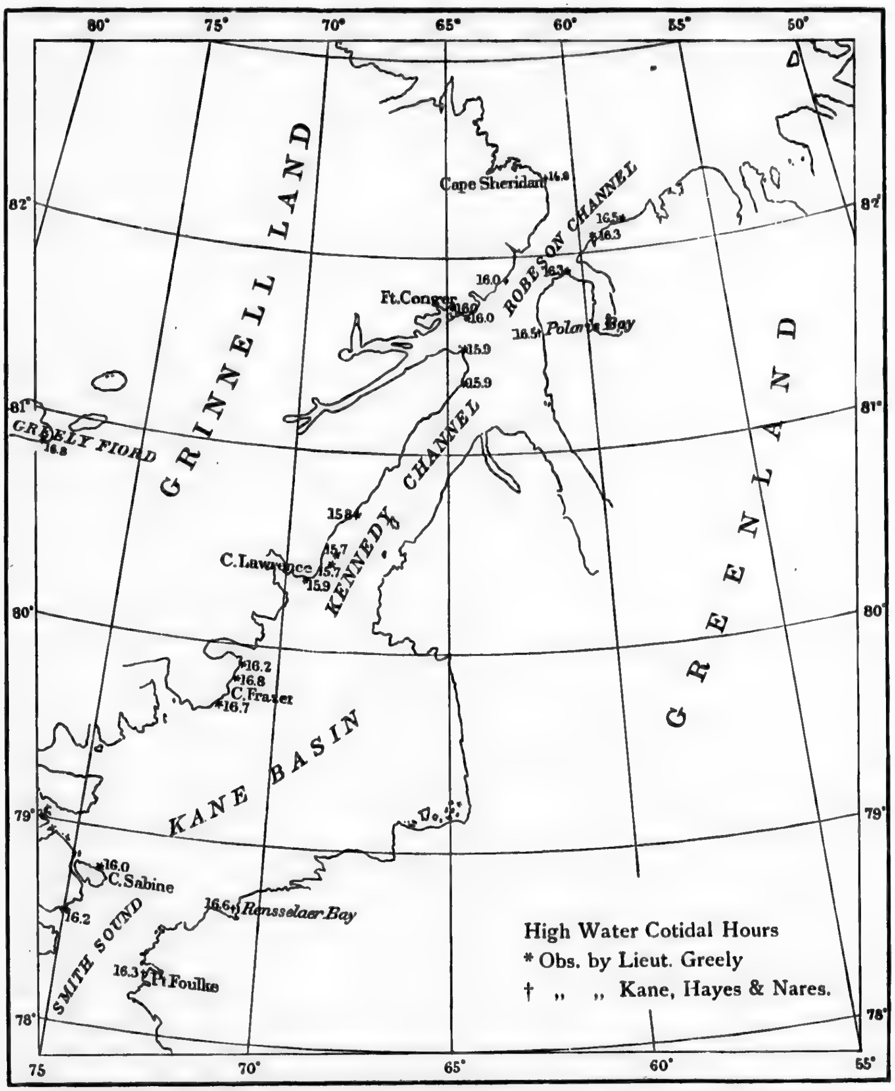

GRINNELL LAND
GREELY FIORD
Cape Sheridan
ROBESON CHANNEL
Ft. Conger
Polaris Bay
KENNEDY CHANNEL
C. Lawrence
C. Frazer
KANE BASIN
C. Sabine
SMITH SOUND
Rensselaer Bay
Pt Foulke
GREENLAND
High Water Cotidal Hours
* Obs. by Lieut. Greely
† „ „ Kane, Hayes & Nares.

TABLE XXX.—*Progress of the tide-wave in the North American Archipelago.*

Name of station.	Authority.	North latitude.	Longitude west from Greenwich.	Establishment high water.		Range of tide.			Correction for longitude.	Correction for moon's retard.	Co-tidal hour of high water.
				Full and change.	Mean.	Springs.	Neaps.	Mean.			
		° ′	° ′	h.	h.	Feet.	Feet.	Feet.	h.	h.	h.
Button Islands	(1)	60.7	65	6.8	6.6	------	------	------	+4.3	+0.2	11.1
Fury and Hecla Strait, Melville Peninsula	(1)	69.4	81.5	7.0	6.8	8	------	------	5.4	0.2	12.4
Ungava Bay	(1)	58.6	68.6	8.9	8.7	38½ (?)	------	------	4.6	0.2	13.5
York Factory	(1)	57 02	92 32	11.2	11.0	10–14	------	------	6.2	0.2	17.4
Port Kennedy, Bellot Strait	(2)	72 01	94 15	23.8	11.2	4.0	1.7	3.0	6.3	0.2	17.7
Refuge Cove, Wellington Channel	(3)	75 31	92 10	−0.4	11.8	5.7	1.3	------	6.1	0.2	18.1
Erebus Bay, Barrow Strait	(1)	74.7	92.7	0.1	12.3	8	------	------	6.2	0.2	18.7
Port Leopold, Barrow Strait	(4)	74.0	90.0	0.1	12.3	6	3	------	6.0	0.2	18.5
Griffith Island, Melville Island	(1)	74.5	95.7	0.3	12.5	3¼	1¼	------	6.4	0.2	19.1
Northumberland Sound	(3)	76 52	97 00	0.1	12.3	1.8	1	------	6.5	0.2	19.0
Melville Island	(5)	74.8	110.8	1.5	13.7	3.8	1.2	2.6	7.4	0.2	21.3
Dealy Island, Baring Island	(6)	74.9	108.7	1.8	14.0	4	------	------	7.2	0.2	21.4

[1] British Admiralty Tide-Tables for 1887.
[2] Captain Sir Leopold McClintock, 1859; Rev. Samuel Haughton, Phil. Trans., 1875.
[3] Sir Edward Belcher, R. N., 1853; Rev. Samuel Haughton, Phil. Trans., 1875.
[4] Sir James C. Ross, R. N., 1848–'49; Rev. Samuel Haughton, Phil. Trans., 1863.
[5] Admiralty Manual and Instructions for the Arctic Expedition, 1875.
[6] H. M. S. *Resolute*, McDougall, mate, 1853; British Admiralty Tide-Tables for 1887.

There is no difficulty and no doubt about the tides of Baffin Bay. They come through Davis Strait and are easily traced into Smith Sound. The co-tidal hours in Smith Sound and northward are, for greater clearness, laid down on the sketch facing page 698.*

The tide that travels up through Davis Strait and Baffin Bay as a free wave, entering Smith Sound with a mean range of almost 8 feet at Port Foulke and Van Rensselaer Harbor, does not and can not vanish in Kane Basin. Diffusing its motion over an ampler expanse of waters it will cross Kane Basin with diminished range, but on entering Kennedy Channel its aggregate quantity of motion, though somewhat decreased by internal friction and the resistance of boundaries, and probably by giving off a wave through openings to the westward, ought to produce, when gathered into that narrow sea, a tide nearly equal to the one observed at Van Rensselaer Harbor, an exhibition of power, it may be remarked, for which it will pay by a rapid dissipation of its energy. This tide ought, nevertheless, to be still quite sensible to observation when it enters the Polar Ocean, and may well afford a tide of a foot or more in range as far north as Lady Franklin Bay when still further diminished in range by diffusion over the larger area of Hall Basin and Petermann Fiord.

But the Smith Sound can not be the only tide at Fort Conger. The co-tidal hour in Smith Sound, well determined by the observations at Port Foulke and Van Rensselaer Harbor, may be taken as 16.4^h. The distance is about 200 nautical miles, and the average depth may be safely put at not more than 200 fathoms. Hence the Smith Sound tide would require about 1.7^h to reach Lady Franklin Bay, making its co-tidal hour at Fort Conger 18.1^h, or in other words its high water arrives at Fort Conger at least two hours later than the high water there observed.

Again, although the principal component of the diurnal inequality tide is sidereal in its speed both in Smith Sound and Lady Franklin Bay, the ratio of the diurnal inequality to the whole tide differing so materially (it is about $\frac{2}{7}$ at Port Foulke and $\frac{1}{6}$ at Fort Conger) would seem to mark the tides in these waters as specifically distinct from each other.

It is almost a certainty that a part, and probably the major part, of the Lady Franklin Bay tide has traveled up from the North Atlantic through the east Greenland seas, rounded Greenland, and entered Robeson Channel from the north. The substantial continuity of the Atlantic has been demonstrated by soundings as high up as the eightieth parallel. The Arctic Ocean is its head, and unless an undiscovered continent intervenes the tides of the North Atlantic are by far the greatest that beat upon the shores of the circumpolar seas. The passage between Greenland and Spitzbergen is broad and deep, the soundings ranging up to 2 and 3 miles. The tidal wave that reaches Dane Island in northwest Spitzbergen with the co-tidal hour 11.5 would be able to round Greenland in latitude 85°, longitude 20° W., and reach Cape Sheridan, on the coast of Grinnell Land, a total arcual distance of 11° 40′, in 3.3^h, through waters averaging 670 fathoms, or three-fourths of a statute mile in depth. This is not an improbable average depth, and would bring the Spitzbergen wave to Cape Sheridan with a co-tidal hour 14.8, the observed value at that station. If Greenland extend further to the north or east the average depth of the ocean would require to be greater; but the foregoing assumptions are deemed not improbable values of the existing related elements of ocean depth and continental extension.

*In this sketch "Kane, Hayes and Nares" should read "Kane, Hayes, Hall and Nares."

The tidal crest that reaches Cape Sheridan with a co-tidal hour 14.8 ought to arrive at Fort Conger some 40^m later, or with a co-tidal hour 15.5. We have estimated the like crest from Smith Sound to come along 2.6^h later, with a co-tidal hour 18.1. This would make the tide from the north the principal contributor to the Fort Conger tide, which has the co-tidal hour 16.0. These numerical relations are by no means precisely ascertained, but some such combination of tides in all likelihood obtains at Fort Conger, the tide from the north having perhaps double the range of the tide from the south.

Assuming the epochs 15.5^h and 18.1^h for the arrival at Fort Conger of the two component tides to be correct, their phases at that station differ by 2.6^h. Going southward from Fort Conger the epoch of the tide through Robeson Channel will continually increase; that of the Smith Sound tide will diminish at an equal rate. At a time distance of 1.3^h south of Fort Conger and 0.4^h north of Smith Sound there will be complete coincidence of phase, high water of the one falling upon high water of the other, low water of the one upon low water of the other. Taking the probable depths into account this point would be reached somewhere between Capes Lawrence and Frazer. Other things being equal, the highest tides would be found here. But other things are not equal, and the greatest range might be confidently expected somewhat to the northward, where there is substantial though not exact accord of phase, but where both tides furnish intenser manifestations of their inherent energies on a more restricted field, that is, somewhere well south in Kennedy Channel. It was in this region that Lieutenant Greely (see Table XXV) noted ranges much in excess of any ever observed elsewhere between Cape Farewell and Robeson Channel. Going northward from Fort Conger the two component tides would differ more and more in phase. At Cape Sheridan they would differ by nearly 4^h, and would thus be opposing rather than conspiring with each other. The small range of the tide north of Fort Conger (see Tables XXIV and XXIX) is probably partly due to this cause.

Tables XXVIII to XXX, with other data, have been used in the construction of the accompanying "chart showing the approximate co-tidal lines of the north Atlantic and north Pacific Oceans and the Arctic seas." It need scarcely be remarked that the meeting of the two Atlantic tides is not in fact confined within the restricted limits indicated on the chart. This is simply a region where their amplitudes are supposed comparable and which is the theater of their most striking combined effects. The casual observation at the head of Greely Fiord, so far as it has weight, tends to confirm the hypothesis that Grinnell Land is not indefinitely extended toward the west. It seems probable that this fiord receives its tide from the north. In considering the Cape Barrow tide it is well to remember that Cape Barrow lies at the head of the Atlantic basin, almost directly over the pole from Spitzbergen and the ample channel of the east Greenland sea, and at about the same distance from Spitzbergen as Spitzbergen is from Ireland. The co-tidal line of Cape Clear is 4.5^h, of Dane Island 11.5^h, and of Cape Barrow 22.5^h, or the time distances are 7^h from Ireland to Spitzbergen and 11^h from Spitzbergen to Cape Barrow, indicating that the latter course is shallower or more circuitous than the former. An average depth of 375 fathoms would suffice to bring the Dane Island tide over a direct course to Cape Barrow. The feebleness of the Cape Barrow tide (the range is considerably less than a foot) is not so marked as it probably would be after traveling 30 degrees over so shallow a course. The intervention of land masses and a circuitous course through deeper waters is not improbable.

Pressure of other duties forbids a further discussion of this interesting series, and a number of important questions are reluctantly left untouched. The laws of the tides in the Arctic seas, a region where the absence of controlling astronomical forces is favorable to a species of tidal anarchy, can only be determined from a cordon of long series of observations generously distributed about the polar basin. The establishment and maintenance by Lieutenant Greely of one such station, and his preservation of the records of observation, will be regarded as a substantial contribution to science by all interested in this branch of physical inquiry.

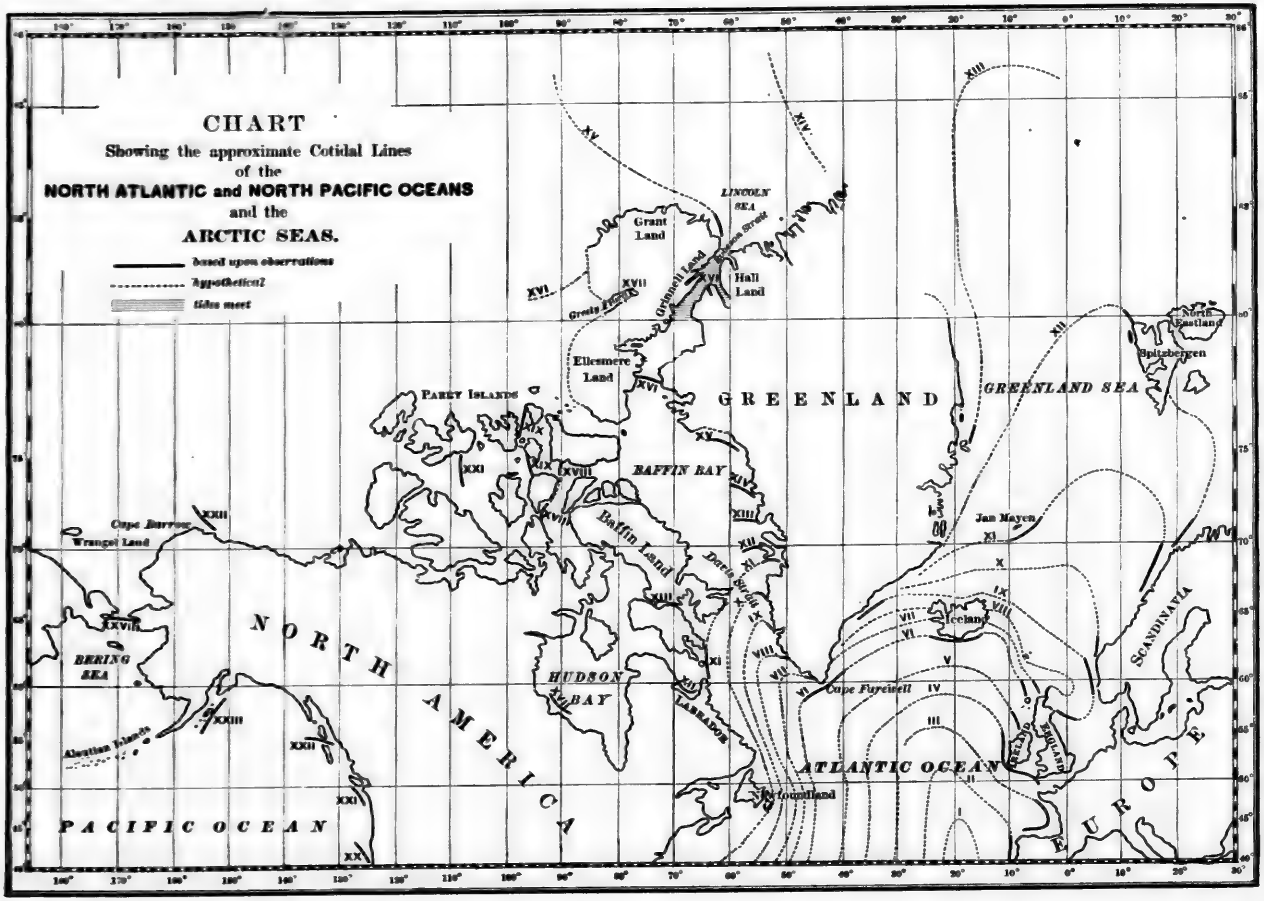
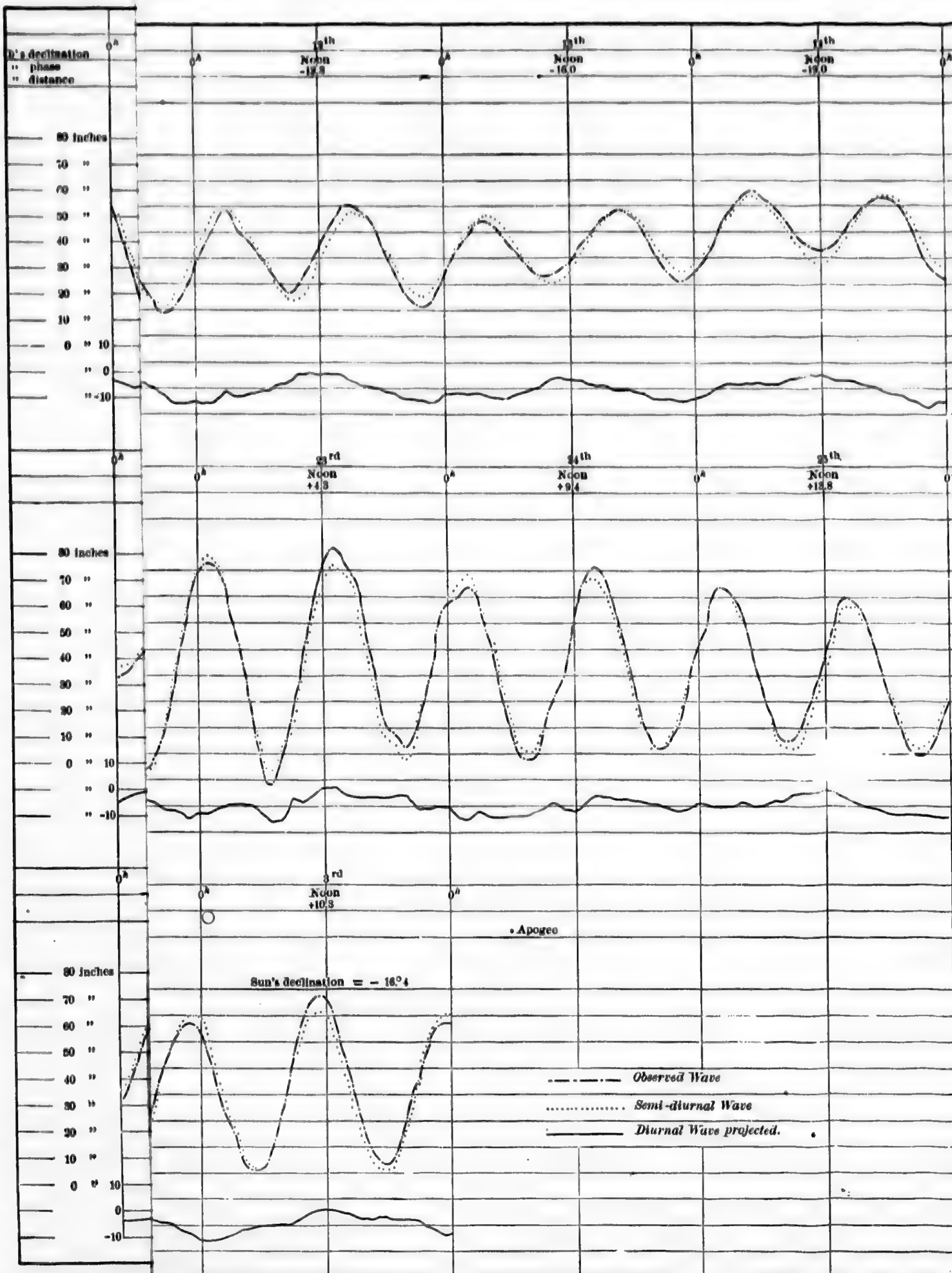
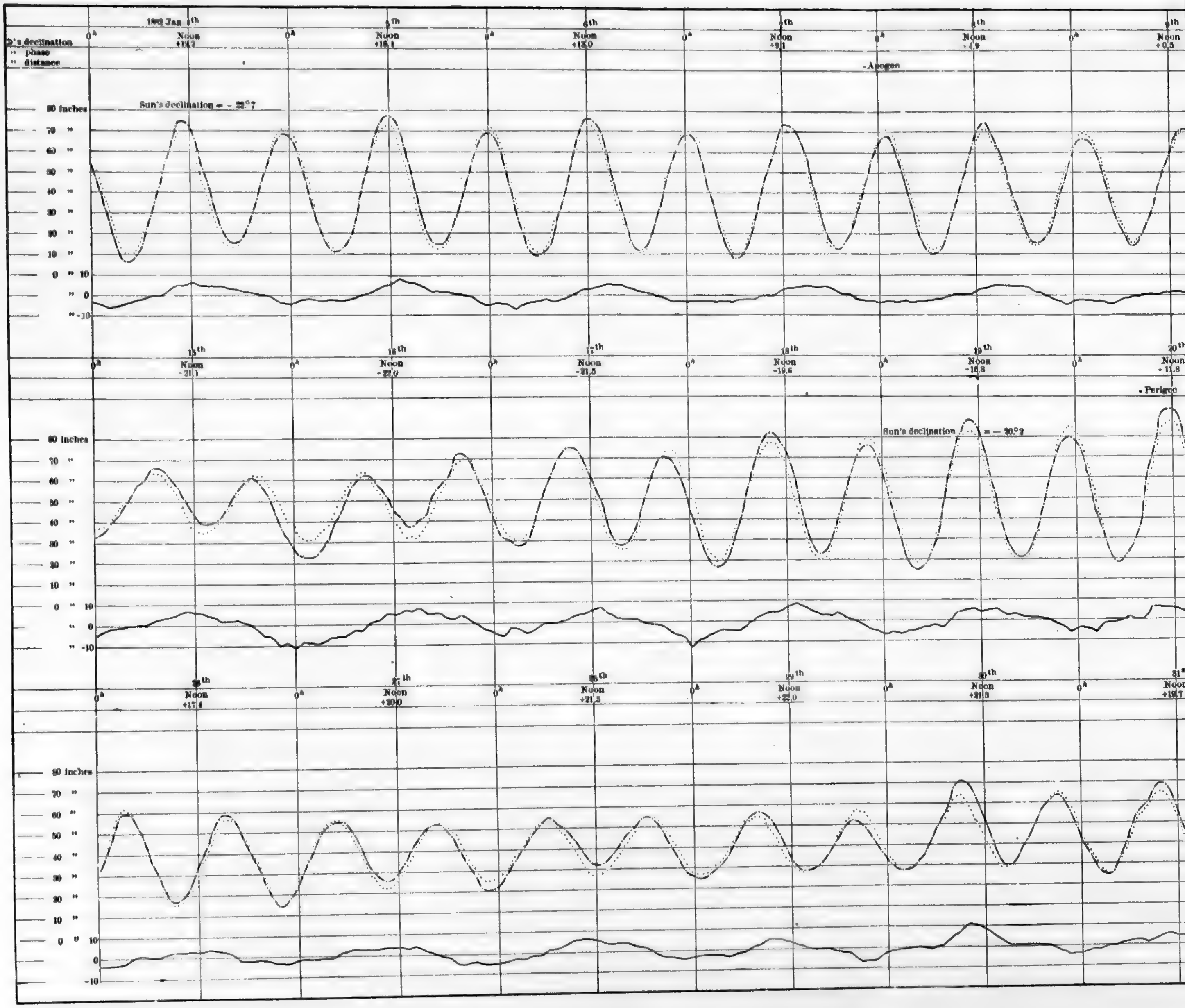


CHART
Showing the approximate Cotidal Lines
of the
NORTH ATLANTIC and NORTH PACIFIC OCEANS
and the
ARCTIC SEAS.
based upon observations
hypothetical
tides meet
Grant Land
LINCOLN SEA
Grinnell Land
Hall Land
Ellesmere Land
Parry Islands
GREENLAND
GREENLAND SEA
North Eastland
Spitzbergen
Jan Mayen
BAFFIN BAY
Baffin Land
Davis Strait
Cape Barrow
Wrangel Land
NORTH AMERICA
BERING SEA
Aleutian Islands
HUDSON BAY
LABRADOR
Cape Farewell
Iceland
SCANDINAVIA
ATLANTIC OCEAN
Newfoundland
IRELAND
ENGLAND
EUROPE
PACIFIC OCEAN

TIDAL OBSE

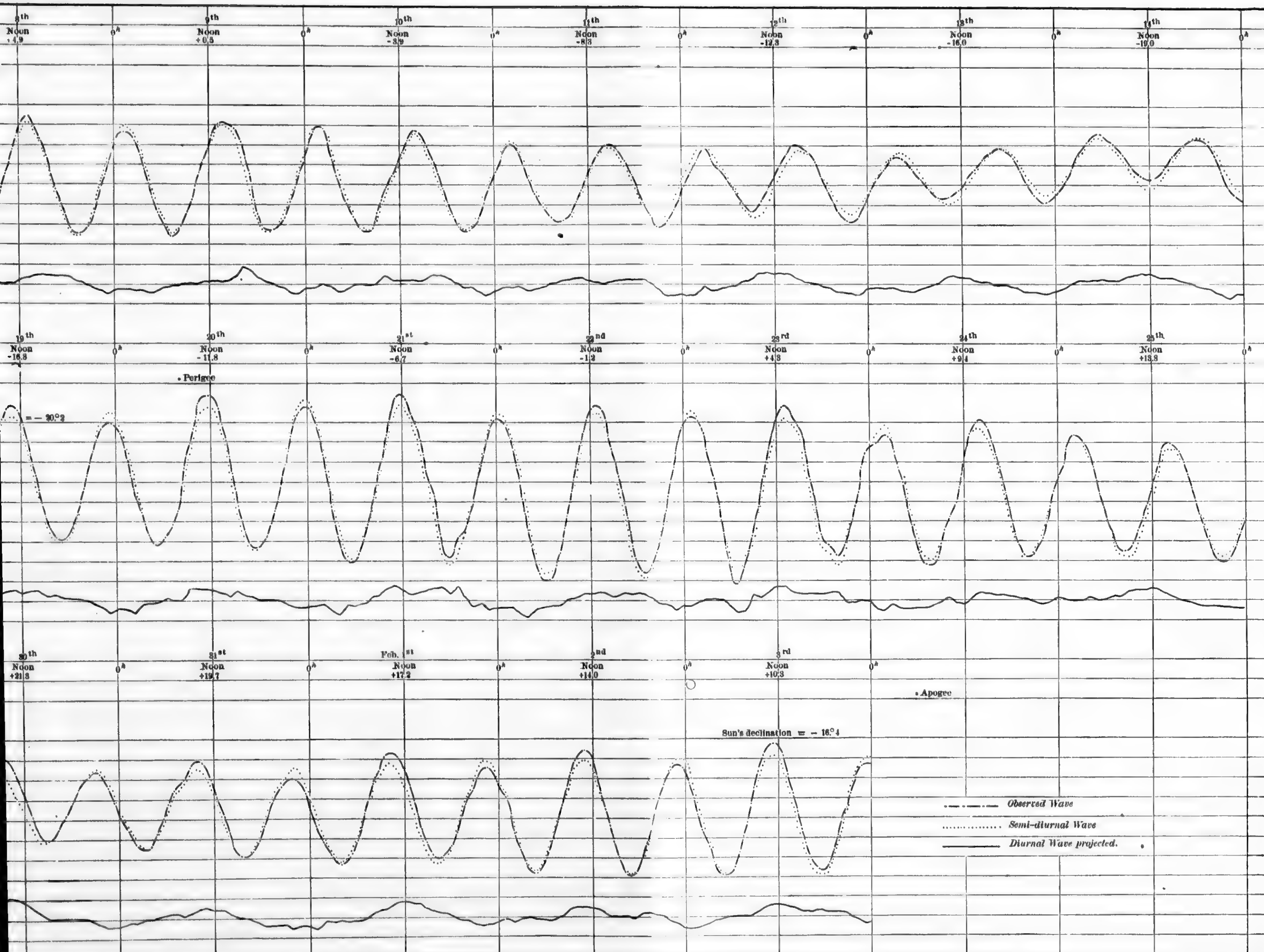


D's declination
" phase
" distance
Noon
-12.8
Noon
-16.0
Noon
-19.0
80 inches
Noon
+4.3
Noon
+9.4
Noon
+13.8
Noon
+10.3
Apogee
Sun's declination = − 16°.4
Observed Wave
Semi-diurnal Wave
Diurnal Wave projected.



Sun's declination = − 22°7
Apogee
Perigee
Sun's declination = − 20°2
80 inches
Noon

ATION OF THE DIURNAL AND SEMI-DIURNAL WAVES.



TIDAL OBSERVATIONS. PLATE II.

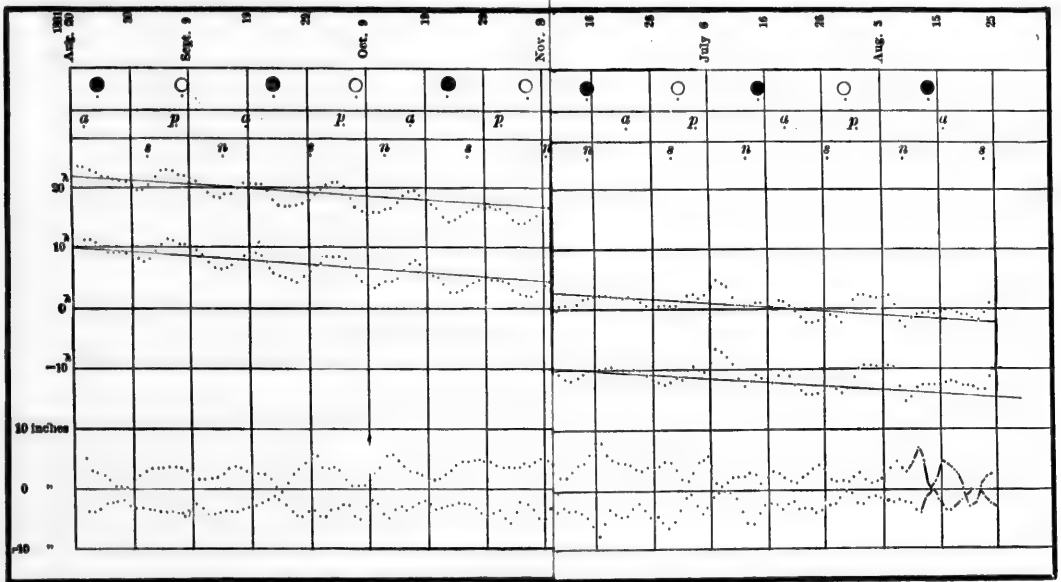
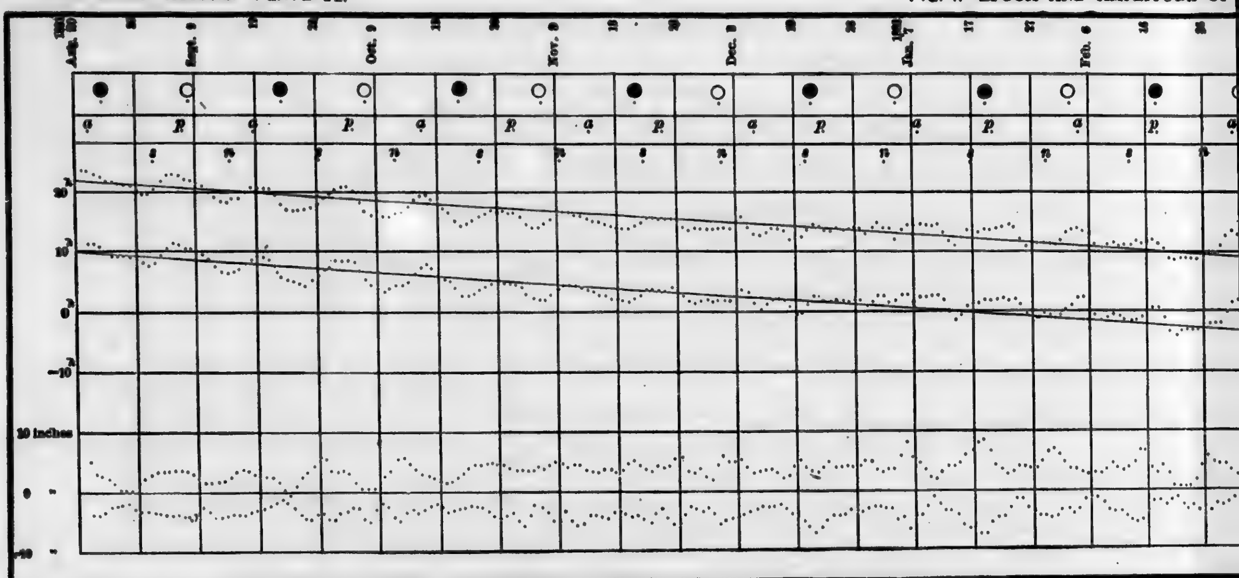
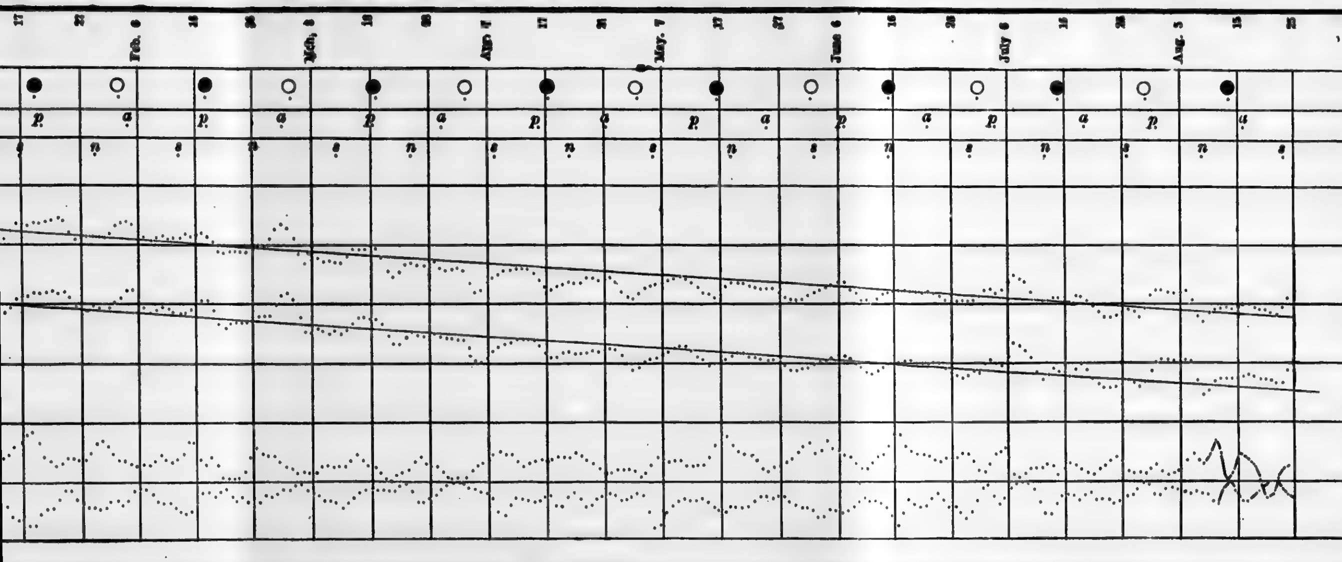


FIG. 1. EPOCH AND AMPLITUDE OF



a, apogee. p, perigee. n, moon farthest

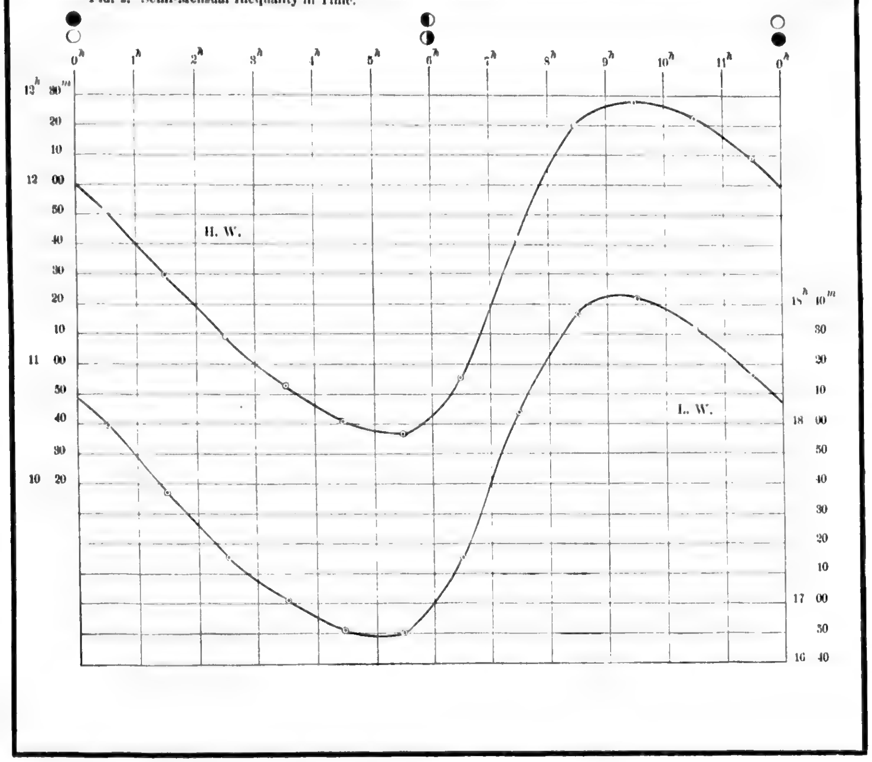
1. EPOCH AND AMPLITUDE OF THE DIURNAL WAVE.



p, perigee. *n*, moon farthest north. *s*, moon farthest south.

TIDAL OBSERVATIONS. PLATE II.

Fig. 2. Semi-Mensual Inequality in Time.



TIDAL OBSERVATIONS. PLATE II.

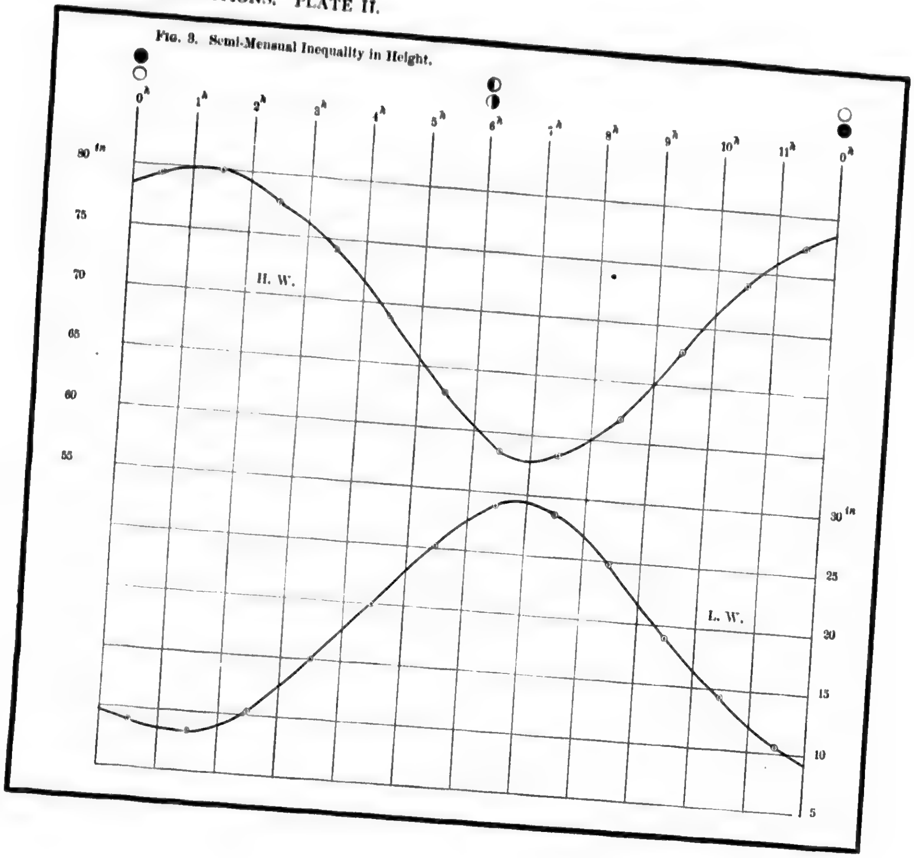


FIG. 8. Semi-Mensual Inequality in Height.

PENDULUM OBSERVATIONS.

APPENDIX 141.

A pendulum furnished by the U. S. Coast and Geodetic Survey was swung forty-eight times under favorable conditions, as regards equable temperature, and corresponding sets of time observations were made.

Detailed information on this point has been given the Coast Survey, to which office these observations were sent September 24, 1886.

A. W. G.

PENDULUM OBSERVATIONS.

Report by C. S. PEIRCE.

In 1881 the Chief Signal Officer applied to the Superintendent of the Coast and Geodetic Survey for pendulum apparatus, instructions, etc., to enable Lieutenant Greely to determine the acceleration of gravity at Lady Franklin Bay. Mr. Carlisle P. Patterson, then Superintendent of the Survey, was a man of high intelligence, and though he did not class himself among scientific men, yet had for so many years conducted investigations in association with them that he understood most of the conditions of success in scientific work. He at once put me into personal communication with Lieutenant Greely, and instructed me to do what was necessary to further the end in view, without hampering the business by requiring the observance of intricate forms. We were just then commencing the construction of the series of Peirce pendulums. These instruments will be elsewhere described, and it is only necessary to say here that they are invariable reversible pendulums of nearly cylindrical contour, so that the effects of viscosity can be theoretically ascertained.

It was agreed that Lieutenant Greely should take with him No. 1 of this series of pendulums, and that he should send me one of his companions, Mr. E. Israel, to be instructed in the use of the instrument. Very little time remained, however, after the completion of the pendulum before it was necessary to pack it up for transportation. The preliminary operations in Washington were therefore somewhat hurried. Eight swingings of the pendulum were made in room No. 6, in the basement of the Coast Survey building. This station had never been used before, and I unhappily found out, too late, that the sandstone piers had the peculiarity of bending back and forth by a considerable amount under the oscillating pendulum, without elastic restoration. Accordingly, it became of the very highest moment for the success of the whole work that these piers, or rather the entire dolmen, should be preserved intact, so that the pendulum could be again swung on the same support after its return. Unfortunately, while I was afterwards in the field, a naval officer was permitted to remove the stone capping the piers, to carry with him to South America, in order, apparently, to save the trouble of cutting a hole in a plank. The result is that these preliminary swingings must be regarded as of no value. The position of the center of mass of the pendulum was determined by me before it was sent out; and the distance between the knife-edges was carefully compared with the German normal meter, No. 49, to which I have referred the lengths of all the reversible pendulums used by me.

The pendulum was finally placed in a wooden box having holes bored in it in such a way as to permit air to be blown through it and through the hollow stem of the pendulum; and a current of air, thoroughly dried with chloride of calcium, was passed for a long time through the box, which was then stoppered, placed in a tin case, and soldered up. The object of this proceeding was to prevent the pendulum being found covered with frost when wanted for use in its arctic destination. Then

the pendulum was carried to Fort Conger, by far the most northerly station which ever has been or is ever likely to be occupied for exact scientific observations, and it was there swung on sixteen days by Lieutenant Greely, aided by Mr. Israel, with a remarkable degree of skill and energy.

The directions accompanying the instrument were that the pendulum should be swung on eight days, once each day with heavy end down and twice with heavy end up, the one swinging in the former position being intermediate in time between the two in the latter. After these eight days' swingings the knives were to be removed and interchanged, and eight days more work was to be done in the same manner in the new position of the knives. This programme was faithfully carried out; but after the interchange of knives the periods of oscillation show a large change, and this is of such a character as not to be eliminated by the formula for the reversible pendulum. This seems to have been due to a difference in the cylindricity of the edges, combined with the effect of some accident to the pendulum. The result is that only the observations made after the interchange of knives can be used.

On the abandonment of Fort Conger the head upon which the pendulum had been supported in its oscillations (the bearings of the knife-edges forming a part of it) was left behind; but the pendulum itself was courageously brought away and carried down to the camp, from which the survivors of the party, of whom the lamented Israel was not one, were rescued. It seems almost inconceivable that any instrument could have gone through that terrible journey over ice hummocks, etc., intact. The chronometer brought back at the same time arrived almost smashed to pieces. Nevertheless, a remeasurement of the pendulum after its return to Washington shows that it had only undergone an increase of $\frac{1}{30000}$, a change which might almost be expected without any special accident: namely, in June, 1881, the pendulum was found 397.2 microns longer than Meter 49, and in December, 1884, it was found 429.3 microns longer, both at 20° C. The pendulum was oscillated at the Smithsonian Institution, and, using the formula for the reversible pendulum, these experiments give a value for gravity at that station agreeing closely with that given by our best pendulum, Peirce No. 2, and in accordance with other results: namely, the period of oscillation of a meter pendulum (subject to some small corrections) was, according to No. 1, 1.0063191^s, while according to No. 2 it was 1.0063186^s. This shows that the knives of Pendulum No. 1 never underwent any permanent damage.

But, though there was so little change in the length of the pendulum, there is evidence that it lost a large part of its mass. In 1881 illness prevented my weighing the pendulum myself, and it was not weighed at all in its finished state. But my assistant reported that while still symmetrical, and after having been polished, its mass was 6477 grams, that the added load was 3985 grams, and that in the adjustment 4.6 grams were deducted, so that its total mass must have been 10457 grams. My experience in the construction of other pendulums shows that the mass so calculated was probably in excess by 5 or 10 grams, owing to the operation of polishing. But the pendulum now weighs only 10436 grams, so that it would seem to have lost from 10 to 15 grams, probably on the journey from Fort Conger to Camp Clay. The center of mass, too, was apparently moved 0.32 millimeter toward the center of figure. Namely, I found in 1881 that the distance from the center of mass to the nearest knife-edge was 25.105 centimeters, while Mr. Farquhar now finds that with the same arrangement of the knives the same distance is 25.137 centimeters; yet as economical considerations have always prevented our expending the sum of $50 required for a suitable instrument to measure this quantity, I should not think these measures by themselves conclusively proved a change. This, however, is not all. The excess of the period of oscillation with the heavy end down over that with the heavy end up, corrected for flexure and brought to the standard pressure and temperature (one absolute atmosphere and 15° C.), was $+0.0006514^s$, while the corresponding difference at Washington, after the return, was found to be $+0.0007009^s$. The difference between these corrected for difference of gravity is $+0.0000494^s$. This result, not depending upon the coefficient of expansion, is probably nearly correct. But there is an equation to be satisfied between the loss of weight, the shifting of the center of mass, and the change of period. Moreover, any two of these quantities determine the point (supposed on the axis of the pendulum) where the loss took place; and the question arises whether this was a point at which such a loss could take place. Now, there are but three points where the loss was possible. One of these is 3 centimeters outside of the knife-edge at the heavy end. If 12 grams were lost at that point the center of mass would be shifted by 0.32 millimeter, the amount observed; and the excess of the period with heavy end down over that with heavy end up would be increased by $+0.0000472^s$, or very nearly the amount observed. The agreement of these numbers tends to show that the alteration which the pendulum underwent during its homeward journey did not involve any difference in the distance between the knife-edges, so that the pendulum may still be treated as invariably reversible, though not as two invariable pendulums.

Having thus narrated the history of the instrument, I proceed to consider the difficulties of deducing any result from the observations. The atmospheric pressure at Fort Conger exhibits no great range, and does not differ much from that at Washington, so that the small corrections can be satisfactorily calculated from theory. The case is far otherwise with the temperature corrections. The difference of temperature between the two stations was about 50° C. This would make so much difference in the effect of the atmosphere as to involve it in some doubt. Still, as long as the pendulum is treated as reversible, but not as invariable, except as to the distance between the knife-edges (a treatment necessitated by the circumstances just narrated), this is a matter of little consequence.

The coefficient of expansion of this pendulum, and of another, Peirce No. 4, constructed of brass purchased at the same time as the material of No. 1, was determined by comparisons of those pendulums with a meter marked U. S. C. S.—C. S. P.—1878—B., at different temperatures. This bar was made at the same time as and is in every respect a match with the meter A, whose coefficient of expansion was carefully determined by me and published in my Measurements of Gravity at Initial Stations.* This meter B has a series of different lines at one end. The mean of ten skillful comparisons by Mr. D. C. Chapman, on five days of December, 1884, between pendulum No. 1 and meter B, taken at its outer line, makes the pendulum longer by $+251.6^{\mu} \pm 0.3^{\mu}$ at 18.46°; and the mean of five comparisons on two days by the same observer during the same month makes the same excess $242.7^{\mu} \pm 0.1^{\mu}$ at 30.99° C. The expansion of the pendulum was, according to these measures, 0.71^{μ} less than that of the meter per degree. Six comparisons of pendulum Peirce No. 4 with the same meter at the third line from the end, made in the previous October, on three days, make the excess of the pendulum $-0.9^{\mu} \pm 0.3^{\mu}$ at 16.83°, and six comparisons on four days in the same month, all by the same excellent observer, make the excess $-6.5^{\mu} \pm 0.4^{\mu}$ at 25.42°. This gives for the excess of the expansion per degree centigrade of the pendulum over meter B, -0.65^{μ}; but I prefer to use the comparisons of Pendulum No. 1; and since the coefficient of meter A was found to be 18.95^{μ} we assume 18.24^{μ} for the pendulum. At an extremely low temperature this coefficient would, of course, be smaller. The coefficient 18.24^{μ} is for the temperature of 24.6° C. Now, Fizeau (*Comptes rendus*, LXVIII, p. 1125) examined a specimen of brass whose coefficient of expansion at 24.6° C. was 18.28 millionths; and this coefficient was found to increase 1.96 millionths per 100° C. of elevation of temperature. As the first coefficient was so nearly the same as that of Pendulum No. 1, we may assume that the second would be so, too. The observations at Fort Conger after the interchange of the knives were at a mean temperature of $-30.4°$ C. To reduce them to $+15°$ C. we must use the coefficient for $-7.7°$ C., and since this is 32.3° below the temperature for which the coefficient was observed, we calculate the coefficient to be used as follows:

$$
\begin{aligned}
&\text{Coefficient of expansion at } 24.6° = 18.24 \text{ microns per degree C.} \\
&\text{Correction to } -7.7° \text{ C.} = 1.96 \times .323 = .63 \\
\therefore\ &\text{Coefficient of expansion at } -7.7° \text{ C.} = 17.61
\end{aligned}
$$

Experiments at different stations, especially in Washington and in Ithaca, show, however, conclusively, that while the effects of temperature calculated from the expansion and the atmospheric theory answer well enough for heavy end up (in which position the atmospheric effects, being three times as great as with heavy end down, greatly reduce the effect of expansion), yet with heavy end down the effect of temperature on the period is much larger in fact than the theory indicates. Similar phenomena have presented themselves to many experimenters; and the later Repsold pendulums may be said to be almost exceptional in not showing anything of the sort to any marked extent. The cause of the phenomenon can only be surmised. In order to determine the proper value of the expansion to be used in reducing the periods it would be necessary to leave a pendulum support undisturbed for six months and re-occupy the same station at the end of that time; and in order to understand the effect sufficiently to allow for it with certainty it should be studied through a large range of temperature. For this purpose a station like Minneapolis should be chosen. But in the present state of our knowledge, and in a case like this, the expansion deduced from linear measures must be used.

Elaborate observations upon the descent of the arc were made by Mr. Israel, and these have been reduced by Mr. H. Farquhar, of the Coast and Geodetic Survey, according to the method given in my "Measurements of Gravity at Initial Stations," with some improvements in detail. In the following tables these observations with the reductions are first given, and are followed by the observations of periods, and then by the measure of flexure. In these Mr. Israel says he used "the weight of 2.5 pounds;" but I think that this must have been the weight which in the Coast Survey Report for 1881, p. 377, is said to weigh $1.0818^{k} = 2.38$ lb., and I have so treated it in the reductions.

* U. S. Coast Survey Report for 1876, Appendix 15.

Decrement of arc.—Observed D_ϕ t in swings with heavy end up.

φ	1		3		4		6		7		9		10		13		16		18		19	
	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.
.030	---	---	---	---	---	---	1.0	1.1	---	---	---	1.5	---	---	---	---	---	---	---	---	---	---
.029	---	---	---	---	---	---	1.0	1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.028	---	---	---	---	---	---	---	1.3	1.3	1.1	---	---	---	---	---	---	---	---	---	---	.9	1.0
.027	---	---	---	---	---	---	---	---	1.1	1.0	---	---	---	---	---	---	---	---	---	---	---	---
.026	---	---	---	---	1.0	---	---	---	.9	.9	---	---	---	---	---	---	---	---	.9	---	---	---
.025	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.024	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.5	---	---	---
.020	---	---	---	1.9		---	1.1	1.0	1.5	1.5	1.7	---	---	---	---	---	---	---	1.3	1.3	---	---
.019	---	---	1.2	1.3		---	1.6	1.6	1.6	1.6	2.1	2.2	1.3	---	---	---	---	2.0	2.0	1.7	1.7	1.8
.018	---	---	1.7	1.7	1.5	---	1.5	1.9	1.8	1.7	2.5	1.8	2.1	1.9	---	1.9	1.8	2.0	2.0	1.8	1.8	1.8
.017	---	---	1.7	1.9	1.7	---	2.3	1.5	1.7	1.7	2.0	2.2	1.8	1.8	---	2.2	1.9	1.9	1.9	1.8	1.7	2.0
.016	---	---	2.0	2.2	1.8	1.3	2.1	2.2	2.0	2.1	2.1	2.0	2.1	2.1	---	2.5	2.1	2.1	2.0	2.1	1.9	2.0
.015	---	---	2.4	2.6	2.5	2.2	2.0	1.9	2.1	2.0	1.9	2.0	2.1	2.0	2.0	2.3	2.1	2.1	2.5	2.1	2.3	2.5
.014	---	---	2.4	2.2	2.1	2.0	2.5	2.2	2.3	2.6	2.3	1.9	2.2	2.1	2.3	2.7	2.4	2.5	2.4	2.2	2.6	2.5
.013	---	---	2.1	2.2	2.7	2.0	2.7	2.7	2.6	2.7	2.5	2.3	2.8	2.7	2.2	2.7	2.3	2.4	2.8	2.8	2.6	3.1
.012	---	3.3	2.5	3.0	2.8	2.2	3.2	2.9	2.8	2.9	3.2	2.6	3.1	3.0	2.3	3.2	3.1	3.1	3.5	3.2	2.9	3.2
.011	2.7	2.8	3.7	3.2	3.3	3.4	3.9	3.9	2.9	2.8	3.5	3.4	3.1	3.0	2.5	4.0	3.2	3.4	3.6	3.2	3.0	3.1
.010	2.7	3.0	3.7	3.9	3.4	3.2	3.5	3.4	3.6	3.9	4.1	3.5	3.7	3.3	2.8	4.9	3.9	3.8	3.6	3.8	3.2	3.7
.009	3.7	3.8	3.6	4.1	4.4	3.9	4.4	4.0	4.1	4.2	4.9	3.9	3.9	3.6	3.6	5.3	4.7	4.0	4.1	4.1	4.1	5.2
.008	4.2	4.8	4.5	4.9	5.1	4.2	4.9	4.2	4.5	5.0	4.9	5.0	4.5	4.1	4.5	5.6	5.1	4.9	5.0	4.2	4.8	4.7
.007	5.0	4.8	5.3	4.7	5.2	4.2	5.2	5.4	5.2	5.6	5.7	5.1	5.5	5.4	4.7	7.0	5.0	5.7	5.9	5.5	4.9	6.4
.006	4.9	5.8	[5.3]	---	5.8	5.7	6.6	5.6	[6.4]	---	5.8	5.6	---	[7.1]	[5.2]	---	[5.9]	---	---	[6.3]	6.3	7.1
.005	[7.8]	[7.8]	[7.7]	---	---	---	[6.9]	---	[6.3]	---	---	---	---	---	---	---	[6.5]	---	---	[7.0]	---	---
.004																						

φ	21		22		23		28		31		33		36		39		43		46	
	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.
.030	---	---	---	---	---	---	.9	.9	---	---	---	---	.9	---	---	---	---	---	---	---
.029	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.028	---	---	---	---	---	---	---	---	---	---	---	.8	---	---	---	---	---	---	---	---
.027	---	---	---	---	---	---	1.2	1.0	---	---	---	---	---	---	---	---	---	---	---	---
.026	---	---	---	---	---	---	---	.8	---	1.0	---	---	---	---	---	---	---	---	---	---
.025	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.024	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.023	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
.020	1.6	1.5	2.0	---	---	1.7	---	---	---	---	1.8	---	---	---	---	1.5	---	---	---	---
.019	1.4	1.6	---	2.0	1.5	1.6	1.5	1.9	---	---	1.7	---	---	---	1.6	2.1	---	---	1.7	---
.018	1.6	1.7	---	---	1.6	1.8	1.9	1.7	---	---	1.9	1.7	---	---	2.1	1.8	---	1.6	---	1.9
.017	1.9	1.8	---	---	1.7	1.9	1.6	1.8	---	---	2.0	1.9	---	---	1.8	2.2	1.9	1.9	---	---
.016	2.0	2.0	---	---	2.0	2.1	1.8	2.1	---	---	2.3	2.0	---	---	2.0	2.2	1.9	2.2	---	---
.015	2.0	2.3	2.0	2.5	2.3	2.2	2.1	2.1	---	---	2.3	2.1	---	---	2.1	2.6	2.0	2.2	---	---
.014	2.2	2.6	2.2	2.1	2.4	2.5	2.1	2.4	---	---	2.6	2.3	---	---	2.5	2.3	2.4	2.4	2.4	---
.013	2.7	2.5	2.8	2.4	2.9	2.8	2.5	2.9	2.7	2.7	2.8	2.6	---	---	2.3	2.8	2.5	2.8	3.1	3.1
.012	2.9	2.6	3.6	2.9	3.1	3.1	2.9	3.0	2.8	3.0	3.6	2.9	---	---	2.5	3.2	3.0	2.9	3.2	2.7
.011	3.1	3.1	3.4	3.4	3.0	3.8	2.9	3.2	3.1	3.5	3.7	3.1	---	3.8	3.3	4.0	2.9	3.3	3.2	3.2
.010	3.7	3.5	4.4	3.5	3.6	4.0	2.3	3.9	3.4	3.7	4.3	3.6	---	4.7	3.8	4.3	3.3	3.5	3.9	3.8
.009	3.5	4.2	4.5	4.5	3.9	4.2	3.8	4.1	3.7	4.2	4.5	3.4	---	5.2	4.0	4.9	3.6	4.5	4.5	4.6
.008	3.9	5.3	5.3	4.6	4.2	4.8	4.5	5.1	4.3	5.1	5.4	4.3	3.5	---	4.5	4.8	4.6	4.5	4.5	4.3
.007	5.1	5.3	5.5	5.1	5.0	5.8	4.8	5.8	5.1	5.8	---	5.4	4.1	---	4.8	6.3	5.0	5.2	6.1	5.5
.006	[5.7]	---	6.4	5.7	6.2	6.7	5.9	6.8	6.4	6.9	---	[5.8]	[5.1]	---	[5.6]	---	5.3	7.0	---	[5.9]
.005	[6.2]	---	---	---	---	---	---	---	---	---	---	[6.1]	[5.2]	---	[7.4]	---	---	---	---	[8.4]
.004																				

NOTE.—The notation is that of "Measurements of Gravity at Initial Stations."

Observed $D_\phi t$ in swings with heavy end down.

φ	2		5		8		11		17		23		38		41		44	
.030	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.	m.
.029	3.0	----	----	----	----	1.6	----	2.5	2.3	2.3	---	2.4	----	2.0	----	----	----	----
.028	3.0	----	2.8	----	----	2.3	2.1	2.7	2.4	2.3	2.6	2.5	2.2	2.5	----	----	----	----
.027	3.1	----	2.2	1.9	2.1	3.0	2.7	2.5	2.5	2.7	2.2	2.6	2.7	2.7	----	----	1.8	----
.026	3.1	3.0	3.2	3.5	3.0	3.3	3.0	2.7	2.7	3.1	2.8	2.6	2.9	3.3	----	----	3.1	2.3
.025	----	2.9	3.5	3.4	3.5	----	2.5	2.8	2.7	----	3.0	3.1	3.3	2.9	----	----	2.4	3.0
.024	----	3.2	----	----	----	----	----	----	----	----	---	----	----	----	----	----	----	----
.023	----	----	----	----	----	3.3	----	----	----	----	---	----	----	----	----	----	----	----
.022	4.0	----	3.7	3.3	2.9	2.8	2.5	2.4	3.9	3.6	3.3	3.3	----	3.6	----	----	----	----
.021	4.4	3.8	3.2	3.4	3.3	4.5	2.9	3.4	3.8	3.8	3.5	3.9	3.8	3.6	----	----	4.3	3.8
.020	3.7	4.1	4.0	3.8	4.1	4.7	4.4	4.5	3.9	4.6	4.1	4.1	3.8	4.4	4.1	----	3.9	4.0
.019	4.4	3.7	4.0	3.9	5.0	5.0	4.3	[illegible]	4.5	4.6	4.2	4.0	4.3	5.6	3.9	3.5	3.9	4.2
.018	4.5	4.3	5.0	5.1	4.9	5.3	5.8	[illegible]	4.4	5.2	4.2	4.4	5.5	5.1	4.8	3.9	4.1	4.1
.017	4.7	4.7	4.9	4.7	5.1	5.1	4.0	4.1	5.5	6.2	4.6	4.8	5.3	5.9	5.2	5.4	4.1	4.9
.016	5.5	4.7	5.1	4.7	5.1	5.1	4.9	6.1	6.1	5.1	5.0	5.1	6.0	6.2	4.9	4.9	5.1	6.0
.015	4.6	5.5	5.4	5.0	5.2	6.5	5.1	6.1	5.1	6.0	5.4	5.7	6.3	6.1	5.1	5.8	6.2	6.3
.014	5.9	4.5	5.5	6.2	6.5	6.1	6.0	5.7	5.8	7.3	5.9	6.1	6.1	6.1	5.7	5.6	6.4	6.8
.013	8.2	6.2	8.7	6.5	6.3	8.1	6.9	7.0	7.6	7.0	6.3	6.6	6.6	7.3	6.0	5.9	7.0	7.7
.012	6.9	8.0	7.8	8.3	7.9	7.8	6.3	7.7	6.7	7.9	8.6	8.5	7.0	7.5	6.1	6.0	7.5	7.8
.011	8.1	7.0	8.5	9.1	7.7	9.0	9.0	9.1	7.8	9.3	8.7	8.6	9.0	9.1	7.5	7.1	7.7	8.4
.010	9.6	9.1	8.2	9.3	9.1	9.8	8.9	10.0	9.9	10.3	9.5	9.4	9.1	10.6	8.3	7.9	8.4	8.8
.009	11.0	10.1	10.9	10.1	9.9	11.7	10.3	11.1	9.8	11.1	10.5	12.5	9.5	12.0	9.4	8.7	9.0	10.6
.008	11.9	11.4	10.6	11.1	11.5	12.1	11.4	11.8	11.2	13.1	11.7	12.6	12.5	11.8	10.4	10.0	11.1	11.6
.007	12.5	11.7	11.8	11.3	12.4	14.4	12.2	13.8	13.9	13.8	11.6	12.4	11.7	14.7	12.5	12.5	12.6	13.9
.006	15.9	13.8	14.7	13.7	14.4	15.0	14.8	15.1	12.9	14.2	13.4	16.5	14.8	15.9	13.7	12.7	14.1	15.3
.005	23.4	16.3	18.8	16.3	15.0	17.7	17.4	21.2	14.1	17.0	17.3	21.4	16.7	20.3	16.7	15.6	15.1	17.6

Calculation of time of infinite arc from approximate $\frac{1}{b}$

θ	(1) 10^{h}		(2) 11^{h}		(3) 4^{h}		(4) 9^{h}		(5) 9^{h}		(6) 3^{h}		(7) 9^{h}		(8) 9^{h}	
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	....	53.7	60.5	....	....	42.0	....	....	....	19.2	26.1	25.4	....	20.2	44.1	46.8
.029	....	....	61.1		42.1	....	....	....	19.1	....	26.3	25.7	....	....	....	46.0
.028	....	....	61.5	....	....	42.2	....	....	19.3	18.4	26.4	25.8	19.2	20.0	44.1	45.7
.027	53.1	....	61.8	55.2	42.1	....	....	....	18.7	17.5	....	26.1	19.5	20.1	43.4	45.9
.026	....	53.5	62.1	55.4	....	42.1	39.7	38.5	19.1	18.2	26.0	....	19.6	20.1	43.6	46.4
.025	53.0	....	....	55.2	41.9	....	39.7	....	19.5	18.5	....	26.2	19.5	20.0	44.0	....
.024	....	....	....	55.3	....	....		....	....	....	....	....	....	....	....	46.1
.023		....	59.3	....	....	....	....		19.3	18.5	....	....	....	....	43.4	46.0
.022		....	59.7	56.6	....	....	....	....	19.4	18.2	....	....	....	....	42.7	45.2
.021			60.4	56.7	....	....	....		18.9	17.9	....	....	....	....	42.3	46.0
.020	....	52.8	60.1	56.8	....	41.9	39.1		18.9	17.7	25.9	25.3	18.6	19.6	42.4	46.7
.019	52.5		60.2	56.2	41.7	42.4			18.6	17.3	25.6	24.9	18.7	19.7	43.1	47.4
.018	....	52.8	60.2	56.0	41.3	42.1	39.6	37.4	19.1	17.9	25.6	24.9	18.7	19.7	43.5	48.2
.017	52.3	....	60.0	55.8	41.3	42.1	39.4	....	19.1	17.7	25.4	25.1	18.8	19.7	43.7	48.4
.016	....	52.7	60.2	55.2	41.1	42.1	39.2	36.8	18.9	17.1	25.8	24.7	18.6	19.5	43.5	48.2
.015	52.1	....	59.2	55.1	41.2	42.4	39.1	36.2	18.7	16.5	26.0	25.0	18.7	19.7	43.1	49.1
.014	....	52.6	58.9	53.4	41.4	42.8	39.4	36.2	18.0	16.5	25.8	24.7	18.6	19.5	43.4	49.0
.013	51.7	....	60.5	53.0	41.5	42.7	39.2	35.9	20.1	16.4	26.0	24.6	18.6	19.8	43.1	50.5
.012	....	52.6	60.0	53.6	41.1	42.4	39.4	35.4	20.5	17.3	26.2	24.8	18.7	20.0	44.6	50.9
.011	52.5	53.0	60.0	52.5	40.7	42.5	39.3	34.7	20.0	18.3	26.5	24.8	18.6	20.0	43.2	51.8
.010	52.1	52.7	60.6	52.6	41.3	42.6	39.5	35.0	20.1	18.6	27.3	25.6	18.4	19.7	43.3	52.6
.009	51.3	52.2	61.6	52.7	41.5	43.0	39.4	34.7	21.0	18.7	27.3	25.5	18.5	20.1	43.2	54.3
.008	51.0	52.0	62.0	52.6	41.1	43.1	39.8	34.6	20.1	18.3	27.7	25.5	18.6	20.3	43.2	54.9
.007	50.[illegible]	52.2	61.3	51.1	41.0	43.4	40.3	34.2	18.7	16.4	28.0	25.1	18.5	20.7	42.4	56.1
.006	50.2	51.6	61.7	49.4	40.9	42.7	40.1	33.0	17.9	14.6	27.8	25.1	18.3	20.9	41.3	55.6
.005	48.6	50.0	66.5	47.1	39.7	....	39.4	32.2	18.1	12.3	27.9	24.2	18.2	....	37.7	54.7
.004	48.4	50.7		....	39.4	....		....	....	....	26.8	....	16.5	....	....	....
.003		....	....	....	....	....	....		....	....	....	....	....	....	....	....
Summary. .0280	53.1	53.6	61.2	55.2	42.0	42.1	39.7	38.5	19.1	18.4	26.2	25.8	19.5	20.1	43.8	46.1
.0148	52.2	52.7	59.9	54.7	41.3	42.4	39.3	36.4	19.2	17.2	25.9	24.9	18.7	19.7	43.3	49.0
.0084	51.2	52.2	61.2	52.4	41.1	43.0	39.7	34.6	20.0	18.0	27.4	25.3	18.5	20.2	43.1	54.3
.0050	49.0	51.0	64.9	47.1	39.9	42.9	39.5	32.2	18.0	12.3	27.6	24.4	17.9	21.1	38.5	54.8

θ	(9) 2^{h}		(10) 9^{h}		(11) 9^{h}		(12) 1^{h}		(13) 11^{h}		(14) 10^{h}		(15) 3^{h}		(16) 10^{h}	
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	9.7	8.8	....	28.4	....	49.8	....	....	....	34.6	104.7	107.7		55.2	35.1	....
.029	....	9.5	28.6	....	48.8	49.9	....	....	....	....	103.3	106.6	55.2	....	....	35.2
.028	....	....	....	....	48.3	50.0	....		....	34.5	101.8	105.4	....	....	35.2	....
.027	10.1			28.0	48.2	49.7	....	....	....	....	100.3	104.0		54.2	....	35.0
.026	....	....	28.5	....	48.4	49.6	....	....	31.9	34.0	99.2	102.4	53.9	....	35.0	....
.025	....	9.1	....	27.7	47.8	49.3	....	....	....	....	97.3		....	53.4	....	35.1
.024	....	....	....	....	....	....		....	31.0	....	95.6	....				....
.023				....	47.6	48.8	....			....	....		....	....	....	....
.022			....		46.5	47.6	....	....		....			....	....	....	....
.021			....	....	45.7	47.3	....	....		....		....	....	....	....	....
.020	9.4			....	46.1	47.8	....	....	....	....	87.5	92.0	....	....	34.8	....
.019	9.7	8.8	28.0	....	46.1	48.8	....	....	....		85.0	90.0		....	....	35.0
.018	10.2	9.4	27.7	27.0	47.4	48.9	....	....	....	33.6	82.5	88.2	....	49.4	34.9	35.4
.017	11.0	9.5	28.1	27.2	46.5	48.1	....			33.8	79.7	86.2	48.9	....	35.0	35.7
.016	11.1	9.8	28.0	27.1	46.1	48.9	....			34.1	77.3	83.7	....	47.8	35.0	35.7
.015	11.3	9.9	28.2	27.3	45.6	49.4	....	....	29.1	34.7	74.4	81.1	47.0	....	35.2	35.9
.014	11.0	9.7	28.1	27.1	45.4	48.9	68.8	....	28.9	34.8	71.1	78.3		45.6	35.1	35.8
.013	11.0	9.3	28.0	26.9	45.7	49.3		67.7	28.9	35.2	67.5	76.4	44.3	....	35.2	36.0
.012	11.0	9.1	28.3	27.1	44.6	49.6	66.5		28.6	35.4	63.4	72.6	....	42.6	35.0	35.9
.011	11.3	8.8	28.5	27.2	45.5	50.6		65.2	28.0	35.7	59.7	70.1	41.2	....	35.2	36.1
.010	11.7	9.1	28.5	27.1	45.4	51.6	64.5		27.4	36.6	54.1	67.0	39.5	39.1	35.3	36.4
.009	12.3	9.1	28.7	26.9	45.7	52.7	....	62.0	26.7	38.0	48.4	64.5	37.4	37.1	35.7	36.7
.008	12.2	9.0	28.6	26.5	45.6	53.0	60.5		26.3	39.3	42.0	63.4	34.8	34.5	35.4	36.7
.007	13.5	9.4	28.5	26.0	44.6	53.6	....	58.0	26.2	40.3	35.7	62.2	31.5	31.1	35.9	37.0
.006	13.8	9.1	28.6	26.0	43.9	53.2	55.8	57.1	25.5	41.9	29.1	63.3	27.6	27.3	35.5	37.3
.005	13.1	8.2	....	26.6	42.7	55.8	53.6		24.2	....	21.5	....	22.8	22.4	34.9	....
.004	....	....		....	....	....	51.6		....	....	12.7	....	....	....	33.4	....
.003		....	....	23.7				....	....	....	59.1		9.0	....	....	....
Summary. .0280	9.8	9.1	28.5	28.0	48.3	49.7	....	....	32.6	34.4	101.9	105.3	54.8	54.5	35.1	35.1
.0148	10.8	9.4	28.1	27.1	45.9	49.0	69.6	69.6	29.2	34.6	73.7	80.4	46.6	46.3	35.1	35.8
.0084	12.2	9.1	28.6	26.7	45.4	52.6	61.5	60.9	26.7	38.4	44.7	64.2	35.9	35.5	35.5	36.6
.0050	13.4	8.4	28.6	26.0	42.9	55.0	53.8	54.1	24.4	43.5	21.7	61.9	22.9	22.4	34.7	37.6

Calculation of time of infinite arc, etc.—Continued.

ϕ	(17) 10^{h}		(18) 3^{h}		(19) 11^{h}		(20) 11^{h}		(21) 4^{h}		(22) 11^{h}		(23) 0^{h}		(24) 4^{h}	
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	50.2	51.7	24.7	----	---	38.2	54.3	----	40.4	----	----	----	----	4.9	----	34.1
.029	50.1	51.6		----	----	----		53.9		40.5	----	----	3.6	4.9	----	----
.028	49.9	51.3	24.9	24.0	37.6	38.2	53.6	----	40.3	----	----	----	3.6	4.8	----	34.1
.027	49.6	51.2			37.5	38.2	----	53.0	----	40.5	----	----	3.0	4.6	----	----
.026	49.5	51.5	25.0	23.9	----	----	52.9	----	40.0	----	----	----	3.0	4.4	32.9	34.0
.025	49.1	----	24.9	----	37.3	----	----	52.4	----	40.5	52.2	----	2.9	4.4	----	34.2
.024	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
.023	48.5	51.7	----	----	----	----	----	52.6	----	----	----	----	3.5	5.3	----	----
.022	48.8	51.7	----	----	----	----	52.4	----	----	----	----	----	3.2	5.0	----	----
.021	48.9	51.8	25.1	----	----	----	----	52.8	----	----	----	----	3.0	5.2	----	----
.020	48.8	52.4	25.2	24.1	----	----	52.3	----	39.6	40.5	51.9	----	3.1	5.3	----	----
.019	49.0	52.7	25.1	24.0	37.0	38.1	----	52.7	39.8	40.6	52.5	51.4	3.0	5.0	32.9	34.6
.018	48.9	53.4	25.5	24.1	37.1	38.3	52.5	----	39.6	40.6	----	51.8	2.7	4.9	----	----
.017	49.5	54.7	25.8	24.2	37.2	38.4	----	52.7	39.5	40.6	53.5	----	2.4	4.8	32.8	35.6
.016	50.3	54.5	25.8	24.1	37.0	38.5	52.5	----	39.5	40.5	----	----	2.1	4.6	----	----
.015	49.8	54.9	25.9	24.3	37.0	38.6	----	52.4	39.6	40.6	53.7	51.4	1.9	4.7	33.2	35.7
.014	49.4	56.0	26.2	24.2	37.1	38.9	51.9	----	39.4	40.7	53.5	51.7	1.6	4.6	----	----
.013	50.4	56.4	26.3	24.1	37.4	39.1	----	53.4	39.3	41.0	53.4	51.5	1.3	4.6	33.5	35.9
.012	49.7	56.9	26.6	24.4	37.5	39.7	54.7	----	39.5	41.0	53.7	51.4	2.5	5.7	----	----
.011	49.4	58.1	27.2	24.7	37.5	40.0	----	55.5	39.5	40.7	54.4	51.4	3.1	6.2	33.3	36.2
.010	50.3	59.4	27.7	24.8	37.4	40.0	55.7	----	39.5	40.7	54.7	51.7	3.6	6.6	----	----
.009	50.1	60.5	27.8	25.1	37.1	40.2	----	55.8	39.7	40.7	55.6	51.7	4.1	9.1	34.0	37.2
.008	49.8	62.1	27.9	25.2	37.2	41.4	54.6	----	39.2	40.9	56.1	52.2	4.3	10.2	----	----
.007	50.5	62.7	28.3	24.8	37.4	41.5	----	56.9	38.5	41.6	56.8	52.2	2.7	9.4	33.7	38.8
.006	47.9	61.4	28.8	24.9	36.9	42.5	54.0	----	38.2	41.5	56.9	51.9	0.6	10.4	----	----
.005	43.4	59.8	----	24.7	36.5	43.1	----	55.8	37.4	----	56.8	51.1	59.3	13.2	33.2	39.7
.004	---	----	----	23.7	----	----	50.4	----	35.6	----	----	----	----	----	----	----
.003	-	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Summary. .0280	49.7	51.5	24.9	24.0	37.5	38.2	53.6	53.1	40.2	40.5	----	----	3.2	4.7	32.9	34.1
Summary. .0148	49.5	55.0	26.0	24.2	37.2	38.7	53.0	52.9	39.5	40.7	53.4	51.5	2.4	5.0	33.1	35.7
Summary. .0084	50.0	61.1	27.8	24.9	37.3	40.7	51.6	55.9	39.3	40.9	55.8	51.9	3.7	8.8	33.7	37.7
Summary. .0050	43.8	59.9	29.1	24.5	36.5	43.2	52.4	56.2	37.2	41.5	56.9	51.3	59.0	12.8	33.2	39.7

ϕ	(25) 0^{h}		(26) 0^{h}		(27) 5^{h}		(28) 11^{h}		(29) 0^{h}		(30) 5^{h}		(31) 11^{h}		(32) 11^{h}	
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	21.7	----	34.3	----	28.2	29.1	55.4	55.8	6.5	----	9.4	----	53.5	54.4	64.5	67.6
.029	----	22.3	----	----	----	----	55.5	55.9	----	6.6	----	9.7	----	----	----	----
.028	----	----	33.7	31.6	28.4	29.2	----	----	6.6	----	9.4	----	53.7	54.4	64.3	67.4
.027	21.7	22.7	----	----	----	----	55.1	55.8	----	6.1	----	9.4	----	----	-	----
.026	----	----	32.9	30.5	28.4	29.4	55.3	55.8	6.1	----	9.2	----	53.3	54.2	64.3	- --
.025	21.8	----	32.4	----	----	29.4	----	55.6	----	5.3	----	9.4	----	54.2	63.8	----
.024	----	----	--	----	----	----	----	----	----	----	----	----	----	----	----	----
.023	----	----	----	----	----	----	----	----	4.8	----	----	----	----	----	----	----
.022	----	----	----	----	----	----	----	----	----	5.4	----	----	----	----	62.8	67.7
.021	- -	----	31.6	27.5	----	----	----	54.4	6.5	----	----	----	----	----	----	----
.020	----	22.4	----	----	28.3	29.7	----	----	----	6.5	8.9	----	----	----	62.6	68.2
.019	21.7	22.7	31.4	27.5	----	----	54.1	55.2	6.5	----	----	9.5	53.0	54.4	----	----
.018	21.6	22.7	----	----	28.3	29.9	54.0	55.5	----	6.4	9.4	----	----	----	61.6	68.7
.017	21.5	22.8	31.7	27.2	----	----	54.2	55.5	6.0	----	----	9.8	52.7	54.5	----	----
.016	21.3	22.8	----	----	28.1	30.4	53.9	55.4	----	5.8	9.7	----	----	----	61.3	69.6
.015	21.4	23.0	31.6	26.8	----	----	53.8	55.6	4.9	----	----	10.1	52.6	54.7	----	----
.014	21.5	23.0	----	----	28.3	30.8	53.7	55.5	----	6.1	9.7	----	----	----	60.7	70.9
.013	21.6	23.2	32.8	26.2	----	----	53.5	55.6	5.6	----	----	10.1	52.6	55.0	----	----
.012	22.0	23.5	----	----	28.5	31.5	53.5	56.0	----	7.2	9.6	----	52.8	55.2	60.3	72.3
.011	22.2	23.7	33.6	27.4	----	----	53.5	56.1	7.7	----	----	10.5	52.7	55.3	----	----
.010	22.1	24.4	----	----	28.5	31.9	53.3	56.2	----	7.9	9.9	----	52.7	55.7	58.5	72.0
.009	22.2	24.9	36.7	26.5	----	----	53.1	56.6	8.8	----	----	10.6	52.6	55.9	----	----
.008	22.1	25.1	----	----	28.9	33.2	52.9	56.7	----	7.1	10.1	----	52.3	56.1	55.1	77.1
.007	21.7	25.3	37.4	25.4	----	----	52.8	57.2	7.8	----	----	10.3	52.0	56.6	----	----
.006	21.3	25.7	40.5	23.7	29.0	- --	52.2	57.6	----	9.1	9.8	----	51.7	57.0	53.5	81.4
.005	21.0	25.9	43.0	23.8	28.5	34.9	51.6	57.9	8.7	----	----	9.9	51.6	57.4	51.9	83.3
.004	----	----	---	----	----	----	----	----	----	7.3	8.1	----	----	----	---	- -
.003	---	---	---	- -	----	----	----	----	----	---	- -	----	----	----	----	---
Summary. .0280	21.7	22.5	33.5	31.5	28.3	29.3	55.3	55.8	6.3	5.9	9.3	9.5	53.5	54.3	64.2	67.6
Summary. .0148	21.6	23.0	32.2	27.0	28.3	30.7	53.8	55.6	6.1	6.3	9.6	10.0	52.7	54.8	60.9	70.3
Summary. .0084	22.0	24.9	36.3	26.2	28.7	32.9	53.0	56.7	8.1	7.[illegible]	10.0	10.5	52.4	56.1	56.0	75.8
Summary. .0050	21.0	25.9	43.3	23.3	28.6	34.9	51.6	58.0	8.7	8.3	9.0	9.9	51.5	57.4	51.9	83.3

Calculation of time of infinite arc, etc.—Continued.

	φ	(33) 4h		(34) 11h		(35) 0h		(36) 4h		(37) 1h		(38) 2h		(39) 7h		(40) 0h	
		m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
	.030	45.1	----	51.4	----	16.5	----	----	39.7	46.7	47.7	----	10.6	----	14.9	----	----
	.029	----	----	----	51.4	----	17.9	----	39.8	----	----	9.0	10.2	----	----	50.2	----
	.028	----	43.9	51.4	----	16.4		----	----	46.7	----	8.6	10.1	----	15.2	----	50.0
	.027	45.2	43.7	----	51.4	----	17.2	----	----	46.5	47.9	8.5	10.0	13.5	----	50.0	----
	.026	----	----	51.2	----	16.0	----	----	40.1	----	----	8.6	10.5	----	----	----	49.8
	.025	----	43.7	----	51.2	----	17.1	38.4	----	46.4	----	8.8	10.3	13.5	15.1	49.9	----
	.024	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	.023	----			----	----	----	----	----	----	----	----	11.2	----	----	----	----
	.022	----		----	----	----	17.5	----	----	----	----	8.5	11.2	----	----	----	----
	.021			----	----	15.8	----	----	40.7	----	----	8.6	11.1	----	----	----	----
	.020	45.8	43.6	50.8	----	----	18.0	----	----	46.4	48.1	8.4	11.5	----	15.8	----	49.3
	.019	46.2	----		50.9	15.7	----	----	40.9	----	----	8.4	12.8	13.6	15.9	49.3	----
	.018	46.3	43.6	50.7		----	17.7	35.4	----	46.3	48.7	9.4	13.4	13.6	16.4	----	49.0
	.017	46.5	43.6	----	51.0	14.9	----	----	41.7	----	----	9.8	14.4	14.0	16.5	48.7	----
	.016	46.6	43.6	51.0	----	----	19.0	34.8	----	46.5	49.4	10.5	15.3	13.9	16.8	----	49.1
	.015	47.0	43.7	----	51.2	15.9	----	----	42.6	----	----	11.2	15.8	14.0	17.1	48.9	----
	.014	47.1	43.6	50.8	----	----	19.3	34.7	----	46.5	49.6	11.1	15.7	13.9	17.5	----	49.2
	.013	47.4	43.6	----	51.2	15.4	----	----	43.1	----	----	11.1	16.4	14.1	17.5	49.0	----
	.012	47.7	43.7	50.7	----	----	19.7	34.4	----	46.3	50.4	10.7	16.5	13.9	17.8	----	49.2
	.011	48.4	43.7	----	50.8	14.5	----	----	44.0	----	----	11.6	17.5	13.5	18.1	49.2	----
	.010	49.0	43.7	51.1	----	----	20.5	33.7	44.7	46.1	51.5	11.7	19.1	13.7	19.0	----	49.1
	.009	49.8	43.8		51.5	14.7	----	----	45.9	----	----	11.2	21.1	14.0	19.8	49.3	----
	.008	50.3	43.2	50.9	----	----	23.6	31.9	47.1	46.2	52.9	12.2	21.4	14.0	20.7	----	49.5
	.007	51.1	42.9	----	51.0	15.4	----	30.8	----	----	54.0	10.7	22.9	13.9	20.9	49.3	----
	.006	----	42.9	50.8	----	----	24.3	29.5	48.6	44.6	----	10.0	23.3	13.3	21.8	----	49.2
	.005	----	42.2	----	50.5	10.9	20.5	28.1	----	45.6	55.2	8.1	25.0	12.4	----	48.4	----
	.004		40.3	49.6	----	----	----	25.3		----	----	----	----	11.8	----	----	----
	.003		----	----	----	----	----	----		----	----	----	----	----	----	----	----
Summary.	.0280	45.2	43.8	51.3	51.4	16.3	17.4	38.4	39.9	46.6	47.8	8.7	10.3	13.5	15.1	50.1	49.9
	.0148	47.0	43.6	50.8	51.0	15.3	19.0	34.8	42.5	46.4	49.6	10.8	15.5	13.8	17.1	49.0	49.1
	.0084	50.1	43.4	50.9	51.3	14.9	22.8	32.3	46.4	46.1	52.6	11.4	21.1	13.9	20.1	49.3	49.4
	.0050	52.9	42.0	50.3	50.5	10.9	21.5	27.9	49.6	45.3	55.2	8.2	24.7	12.5	22.9	48.4	49.0

	φ	(41) 0h		(42) 5h		(43) 0h		(44) 0h		(45) 4h		(46) 0h		(47) 0h		(48) 5h	
		m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
	.030	----	60.4	9.5	----	23.7	----	37.1	----	59.2	----	----	40.3	57.7	----	5.2	----
	.029	60.4	----	----	9.5	----	24.2	----	39.1	----	59.9	40.6	----	----	57.1	----	5.3
	.028	----	60.2	9.4	----	23.7	----	37.0	----	----	59.9	----	----	56.4	----	5.3	----
	.027	60.9	----	----	9.4	----	23.9	36.0	38.7	----	----	----	40.2	----	55.2	----	5.3
	.026	----	59.8	9.4	----	22.3		36.3	38.2	58.9	59.8	40.4	----	55.0	----	5.3	----
	.025	60.9	----	----	9.4	----	23.6	35.6	38.1	----	60.0	----	40.2	----	53.7	----	5.4
	.024	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
	.023	----	----	----		----	----	----	----	----	----	----	----	----	----	----	----
	.022	----	58.9			----	----	35.2	38.9	----	----	----	----	----	----	----	----
	.021	60.5	----	----	----	----	----	35.8	39.0	----	----	----	----	----	----	----	5.7
	.020	60.6	59.3	9.3	----	----	24.0	35.7	39.0	----	----	----	----	50.5	----	5.6	----
	.019	60.2	58.5	----	9.4	23.0	----	35.3	38.9	58.6	60.2	41.1	----	----	49.7	----	5.6
	.018	60.5	57.9	9.5		----	24.1	34.9	38.5	----	----	41.2	40.6	49.6	----	5.8	----
	.017	60.8	58.4		9.6	22.7	24.0	34.1	38.5	58.5	60.5	----	40.8	----	49.5	----	6.2
	.016	60.4	58.0	9.5		22.7	24.0	33.9	39.2	----	----	41.3	----	48.9	----	5.9	----
	.015	59.9	58.2	----	10.2	22.7	24.3	34.5	39.9	58.4	60.4	----	41.0	----	49.4	----	6.5
	.014	59.4	57.6	10.1	----	22.5	24.3	34.7	40.5	----	----	41.6	----	49.2	----	6.2	----
	.013	58.8	56.9	----	10.4	22.6	24.4	35.1	41.6	58.2	60.5	41.7	41.1	----	48.5	----	6.9
	.012	57.5	55.5	10.5	----	22.6	24.7	35.2	42.0	----	----	42.3	41.7	47.2	----	7.0	----
	.011	55.9	54.5	----	10.6	22.7	24.7	34.8	42.3	58.3	61.1	42.6	41.5	----	47.8	----	7.0
	.010	56.2	53.4	10.6	----	22.5	24.9	34.2	42.1	----	----	42.7	41.6	47.9	----	7.2	----
	.009	55.6	52.1	----	11.1	22.3	24.9	33.2	42.7	57.9	61.5	43.1	41.9	----	48.7	----	7.6
	.008	54.5	50.6	10.5		21.9	25.4	32.8	42.8	----	----	43.6	42.5	47.2	----	7.6	----
	.007	53.8	49.9		11.8	21.9	25.3	32.2	43.5	57.6	62.1	43.5	42.2	----	46.1	----	7.8
	.006	52.0	47.1	10.2	----	21.5	25.1	30.8	43.3	----	----	44.2	42.3	47.6	----	7.3	----
	.005	50.1	44.1	----	11.2	20.3	25.6	27.3	42.3	55.9	63.6	----	41.7	49.6	45.6	----	7.9
	.004	----	----			----	----	----	----	----	----	----	42.1	----	----	6.4	----
	.003	----	----			----	----	----	----	----	----	----	----	----	----	----	----
Summary.	.0280	60.9	60.1	9.4	9.4	23.4	23.9	36.6	38.6	59.1	59.9	40.5	40.2	56.4	55.8	5.3	5.3
	.0148	59.6	57.7	9.9	10.0	22.7	24.3	34.7	40.2	58.4	60.5	41.7	41.0	48.9	49.0	6.2	6.5
	.0084	55.0	51.5	10.5	11.3	22.2	25.1	33.1	42.8	57.8	61.7	43.2	42.0	47.4	47.4	7.4	7.5
	.0050	50.0	44.0	10.0	11.5	20.6	25.4	27.8	42.6	55.9	63.6	44.5	42.0	49.2	45.6	6.9	7.9

Values of $\frac{1}{b}$ and of the ratio heavy end down to heavy end up.

No. of swings.	$\frac{1}{b}$ Heavy end down.	$\frac{1}{b}$ Heavy end up.		Ratio, down : up
	m.	*m.*	*m.*	
1, 2, 3	110.3	37.0	38.7	2.91
4, 5, 6	111.1	36.6	38.6	.95
7, 8, 9	114.9	38.3	40.3	.92
10, 11, 12	110.7	38.1	[21.5]	.91
13, 14, 15	[59.3]	37.3	[19.3]	
16, 17, 18	115.7	39.9	40.7	.87
19, 20, 21	112.6	39.9	38.5	.87
22, 23, 24	113.1	41.5	41.1	.74
25, 26, 27	109.1	39.9	40.9	.70
28, 29, 30	113.1	37.9	39.7	.91
31, 32, 33	112.0	39.1	41.1	.79
34, 35, 36	113.0	38.4	38.6	.94
37, 38, 39	119.0	41.0	41.6	.88
40, 41, 42	105.4	37.7	40.3	.70
43, 44, 45	111.7	38.8	39.1	.87
46, 47, 48	100.9	41.2	41.1	.45

FORT CONGER. PENDULUM, PEIRCE NO. 1.

HEAVY END DOWN.

No. of swing and face.	Temperature (F).	Pressure.	Mean instant, first transits.	Mean instant, last transits.	Arc correction.	Interval.	No. of oscillations.	Uncorrected period.	Rate.
	°	*in.*	*h. m. s.*	*h. m. s.*	*s.*	*s.*		*s.*	
2 B	— 9.5	29.892	8 01 50.956	10 18 58.229	0.085	8227.187	8190	1.0045405	+293
5 F	—10.1	29.936	6 21 54.677	8 43 25.124	0.087	8490.360	8452	1.0045337	+293
8 F	—10.8	29.825	5 45 40.006	8 07 51.636	0.096	8531.535	8493	1.0045372	+293
11 F	—14.6	29.919	5 51 16.941	8 12 45.177	0.088	8488.148	8450	1.0045145	+293
14 B	—18.3	30.041	7 41 37.613	9 16 14.876	0.044	5677.219	5652	1.0044619	+293
17 B	—16.1	29.841	6 51 10.445	9 14 29.119	0.096	8598.578	8560	1.0045068	+293
20 B	—16.0	29.286	7 53 56.610	10 25 41.479	0.093	9104.776	9064	1.0044986	+293
23 F	—15.4	29.789	8 05 37.325	10 28 47.998	0.090	8590.584	8552	1.0045117	+293
26 F	—18.9	29.717	8 35 09.007	10 53 36.815	0.083	8307.725	8271	1.0044402	+294
29 F	—20.8	29.975	8 06 30.184	10 37 34.324	0.093	9064.047	9024	1.0044378	+294
32 B	—21.3	29.776	8 05 19.742	10 32 42.974	0.094	8843.138	8804	1.0044455	+294
35 F	—21.5	29.999	8 18 25.331	10 41 07.292	0.090	8561.871	8524	1.0044429	+294
38 B	—21.6	29.446	10 11 28.548	12 37 41.455	0.095	8772.812	8734	1.0044438	+340
41 F	—25.0	29.872	9 01 36.205	11 13 17.033	0.084	7900.744	7866	1.0044170	+340
44 F	—26.6	29.821	8 38 44.315	10 56 14.706	0.089	8250.302	8214	1.0044195	+340
47 B	—25.9	29.287	9 01 45.782	11 08 54.270	0.068	7628.420	7595	1.0044003	+340

FORT CONGER. PENDULUM, PEIRCE NO. 1—Continued.

HEAVY END UP.

No. of swing and face.	Temperature (F).	Pressure.	Mean instant, first transits.	Mean instant, last transits.	Arc correction.	Interval.	No. of oscillations.	Uncorrected period.	Rate.
	°	in.	h. m. s.	h. m. s.	s.	s.		s.	
1 B	9.9	29.873	5 20 15.304	6 18 43.118	0.027	2967.727	2956	1.0039671	+ 293
3 F	-10.1	29.908	11 18 41.202	12 08 01.802	0.027	2960.663	2949	1.0039550	+ 293
4 F	10.0	29.942	4 15 55.413	5 02 06.354	0.024	2770.917	2760	1.0039553	+293
6 B	-9.2	29.928	10 02 43.028	10 55 30.548	0.027	3176.493	3164	1.0039485	+ 293
7 B	-11.5	29.829	3 55 39.382	4 40 01.286	0.028	3021.876	3010	1.0039455	+ 293
9 B	-10.8	29.830	8 46 03.706	9 35 21.373	0.028	2957.639	2946	1.0039509	+ 293
10 B	15.5	29.900	4 06 24.949	5 00 13.573	0.024	3228.600	3216	1.0039179	+ 293
12 F	13.8	29.948	8 56 31.588	9 21 12.127	0.008	1480.531	1476	1.0030699	+ 293
13 F	-16.8	30.043	6 13 57.083	6 56 51.168	0.019	2574.067	2564	1.0039261	+ 293
15 F	—15.0	30.036	10 29 25.625	10 50 40.055	0.011	1275.218	1271	1.0033190	+ 293
16 F	—16.5	29.802	5 11 23.928	6 10 35.691	0.029	3551.735	3538	1.0038821	+ 293
18 B	—15.6	29.780	10 00 37.269	10 52 11.182	0.029	3093.884	3082	1.0038559	+ 293
19 B	-16.6	29.338	6 13 05.985	7 04 07.873	0.029	3061.859	3050	1.0038881	+ 293
21 B	-16.0	29.207	11 15 58.320	12 05 21.808	0.028	2963.460	2952	1.0038822	+ 293
22 B	15.8	29.796	6 28 32.893	7 18 06.475	0.027	2973.555	2962	1.0039010	+ 293
24 F	16.0	29.786	11 09 37.201	12 00 37.098	0.029	3C59.868	3048	1.0038938	+ 293
25 B	18.5	29.665	6 57 23.116	7 47 58.915	0.029	3035.770	3024	1.0038921	+ 293
27 F	18.2	29.755	12 04 34 987	12 55 40.873	0.029	3065.857	3054	1.0038825	+ 293
28 F	20.3	29.969	6 30 42.121	7 18 43.286	0.027	2881.138	2870	1.0038807	+ 293
30 B	20.2	29.958	11 44 29.864	12 37 02.015	0.029	3152.122	3140	1.0038605	+ 293
31 B	21.5	29.766	6 29 20.535	7 19 48.195	0.028	3027.633	3016	1.0038571	+ 293
33 B	21.1	29.793	11 18 57.889	12 09 35.592	0.031	3037.072	3026	1.0038572	+ 293
34 B	22.4	29.997	6 26 13.701	7 17 17.528	0.028	3063.799	3052	1.0038661	+ 293
36 B	—22.2	29.996	11 14 31.568	12 00 54.307	0.027	2782.713	2772	1.0038647	+ 293
37 B	21.0	29.485	8 22 01.236	9 12 33.904	0.030	3032.638	3021	1.0038523	+ 340
39 B	21.4	29.393	13 50 29.471	14 41 55.326	0.028	3085.826	3074	1.0038471	+ 340
40 B	—25.4	29.842	7 24 44.646	8 09 22.960	0.026	2678.287	2668	1.0038558	+ 340
42 F	25.0	29.899	11 44 32.245	12 30 30.926	0.028	2758.653	2748	1.0038767	+ 340
43 F	26.1	29.834	6 58 38.207	7 46 15.284	0.028	2857.050	2846	1.0038825	+ 340
45 F	25.9	29.830	11 34 56.301	12 22 43.212	0.025	2806.886	2796	1.0038933	+340
46 F	26.4	29.373	7 14 59.632	8 08 09.968	0.031	3100.275	3178	1.0038625	+ 340
48	26.4	29.215	11 40 04.803	12 35 03.470	0.030	3298.636	3286	1.0038455	+ 340

PENDULUM, PEIRCE NO. 1.

HEAVY END DOWN.

Before interchange of knives.

No. of swing.	Temperature, +13.2° F.	Pressure, 29.784 in.	Period corrected for rate.	Temperature correction.	Pressure correction.	Period corrected to mean pressure and temperature.
	°	In.	s			s
2	+ 3.7	+ 0.108	1.0045698	—174	— 15	1.0045509
5	+ 3.1	+ 0.152	5630	—146	— 22	5462
8	+ 2.4	+ 0.041	5665	—113	— 6	5546
11	1.4	+ 0.135	5438	+ 66	19	5485
14*	. .	. . .	. .	. .	. .	. .
17	2.9	+ 0.057	5361	+136	— 8	5489
20	2.8	-0.498	5279	+132	+ 71	5482
23	2.2	+ 0.005	5410	+103	1	5512
Mean						1.0045498

* Necessarily rejected on account of irregular descent of the arc.

PENDULUM, PEIRCE NO. 1—Continued.

HEAVY END DOWN—Continued.

After interchange of knives.

No. of swing.	Temperature, +22.7° F.	Pressure, —29.737 in.	Period corrected for rate.	Temperature correction.	Pressure correction.	Period corrected to mean pressure and temperature.
	°	In.	s			s
26	+ 3.8	- 0.020	1.0044696	—179	+ 3	1.0044520
29	+ 1.9	+0.238	4672	— 89	— 34	4549
32	+ 1.4	+0.039	4749	— 66	— 6	4677
35	+ 1.2	+0.262	4723	— 56	— 37	4630
38	+ 1.1	—0.291	4778	— 52	+ 41	4767
41	— 2.3	+0.135	4510	+108	— 19	4599
44	— 3.9	+0.084	4535	+183	— 12	4706
47	— 3.2	—0.450	4343	+150	+ 64	4557
Time of oscillation at —22.7° F. and 29.737in pressure.						1.0044626
Correction to standard atmosphere						— 681
Expansion to 15° C.						+4014
Flexure						— 655
Elevation, 23 feet.						— 11
Corrected period.						1.0047293

HEAVY END UP.

Before interchange of knives.

No. of swing.	Temperature, +13.6° F.	Pressure, —29.794 in.	Period corrected for rate.	Temperature correction.	Pressure correction.	Period corrected to mean pressure and temperature.
	°	In.	s			s
1	+ 3.7	+.079	1.0039964	—106	— 33	1.0039825
3	+ 3.5	+.114	9843	—100	— 48	9695
4	+ 3.6	+.148	9846	—103	— 63	9680
6	+ 4.4	+.134	9778	—126	— 57	9595
7	+ 2.1	+.035	9748	— 60	— 15	9673
9	+ 2.8	+.036	9802	— 80	— 15	9707
10	— 1.9	+.106	9472	+ 55	— 45	9482
12*	. .	. .	. .	. .	. .	. .
13	— 3.2	+.249	9554	+ 92	—106	9540
15*	. .	. .	. .	. .	. .	. .
16	— 2.9	+.098	9114	+ 83	— 42	9155
18	— 2.0	—.014	8852	+ 57	+ 6	8915
19	— 3.0	—.456	9174	+ 86	+193	9453
21	— 2.4	—.527	9115	+ 69	+223	9407
22	— 2.2	+.002	9303	+ 63	— 1	9365
24	— 2.4	—.008	9231	+ 69	+ 3	9303
Mean						1.0039485

* Necessarily rejected on account of irregular descent of the arc.

PENDULUM, PEIRCE No. 1—Continued.

HEAVY END UP—Continued.

After interchange of knives.

No. of swing.	Temperature, + 22.6° F.	Pressure, —29.736 in.	Period corrected for rate.	Temperature correction.	Pressure correction.	Period corrected to mean pressure and temperature.
	°	*In.*	s			s
25	+ 4.1	.071	1.0039214	—118	+ 30	1.0039126
27	+ 4.4	+.019	9118	—126	— 8	8984
28	+ 2.3	+.233	9100	— 63	— 99	8938
30	+ 2.4	+.222	8898	— 69	— 94	8735
31	+ 1.1	+.030	8864	— 32	— 13	8819
33	+ 1.5	+.057	8865	— 43	— 24	8798
34	+ 0.2	+.261	8954	— 6	—111	8837
36	+ 0.4	+.260	8940	— 11	—110	8819
37	+ 1.6	—.251	8863	— 46	+106	8923
39	+ 1.2	—.343	8811	— 34	+145	8922
40	— 2.8	+.106	8898	+ 80	— 45	8933
42	2.4	+.163	9107	+ 69	— 69	9107
43	— 3.5	+.098	9165	+100	— 42	9223
45	— 3.3	+.094	9273	+ 95	— 40	9328
46	— 3.8	—.363	8965	+109	+154	9228
48	3.8	—.518	8795	+109	+220	9124
Time of oscillation at —22.6° F. and 29.736^{in} pressure						1.0038990
Correction to standard atmosphere						—2026
Expansion to 15° C.						+4006
Flexure						— 220
Elevation, 23 feet.						— 11
Corrected period.						1.0040739

Flexure of Pendulum Piers.

Observer, E. ISRAEL, 1882.

Deflecting force, the weight of 2.5 pounds. [Treated as 2.38 lb.]

1 rev. micr. at —12° F.	=0.001704^{in}
	Flexure.
	r.
Scale 7.843^{in} forward	0.299
Scale 15.858 back	0.656
At center knife-edge	0.414
	=0.000710^{in}
Wt. pend. 23.0 lb. ∴ *MS*	=0.00686^{in} = 174.2$^{\mu}$

PENDULUM, PEIRCE No. 1.

1881, June 11-14.

Comparison with Meter No. 49, middle plugs.

Temperature F.		Length, observed excess pendulum.	Correction for mean to 70°.	Correction for difference.	Excess, corrected.
Mean pendulum and meter.	Excess pendulum over meter.				
°	°	μ	μ	μ	μ
70.3	+0.2	399.5	+0.1	−2.1	397.5
69.3	−0.1	397.5	−0.2	+1.0	398.3
69.5	0.0	398.0	−0.2	0.0	397.8
69.6	−0.2	400.0	−0.1	+2.1	402.0
69.8	0.0	397.5	−0.1	0.0	397.4
70.0	−0.2	393.5	0.0	+2.1	395.6
70.2	−0.1	396.5	+0.1	+1.0	397.6
69.9	−0.4	390.0	0.0	+4.1	394.1
69.9	−0.2	391.5	0.0	+2.1	393.6
70.0	−0.2	393.0	0.0	+2.1	395.1
70.1	−0.2	396.5	0.0	+2.1	398.6
70.2	−0.2	393.0	+0.1	+2.1	395.2
70.3	−0.2	394.0	+0.1	+2.1	396.2
69.5	−0.1	400.0	−0.2	+1.0	400.8
69.6	−0.1	393.0	−0.1	+1.0	392.9
69.8	−0.2	395.5	−0.1	+2.1	397.5
					396.9
Corr. error of thermometers					396.6
At 68°					397.2

PENDULUM, PEIRCE No. 1.

1884, December 1-10.

Comparison with outer line of Meter B.

Temperature C.	Pendulum — meter.	Reduced to 20° C.
°	μ	μ
17.24	+252.4	+251.1
18.11	+252.8	251.6
17.98	+253.2	250.1
18.19	+252.7	253.9
18.38	+252.3	252.5
18.82	+251.4	251.7
19.00	+249.0	250.3
19.74	+249.8	250.9
19.32	+249.6	251.1
19.83	+248.0	250.9
30.30	+242.5	250.7
30.57	+241.9	250.9
30.92	+242.1	250.7
31.45	+241.9	250.4
31.71	+242.2	250.9
Mean pendulum — *B* 1st line		+251.2
1st line — 3rd line		+199.4
B 3rd line — No. 49		− 12.0
Correction to thermometers		+ 0.7
		+429.3

I now give a summary of the observations made with this pendulum in Wasnington in 1884–'85 by me, with the assistance of Mr. W. B. Fairfield.

PENDULUM NO. 1.

1884–'85.

At Smithsonian Institution, Washington, D. C.

Heavy end down.				Heavy end up.			
No. of swing.	Temperature.	Pressure.	*n T.*	No. of swing.	Temperature.	Pressure.	*n T.*
	°	*In.*	*s.*		°	*In.*	*s.*
1	20.15	29.711	15095.205	1	20.75	30.256	5028.101
2	20.58	29.643	.230	2	21.02	30.266	.043
3	20.63	29.753	.212	3	21.23	30.282	.106
4	20.53	30.044	.229	4	21.21	30.300	.093
5	20.20	29.624	.274	5	20.96	30.348	.028
6	20.69	29.618	.232	6	20.98	30.336	.061
7	21.04	29.866	.216	7	21.00	30.344	.048
8	21.18	30.078	.202	8	20.99	30.402	.084
9	20.33	30.681	.251	Means	21.02	30.317	5028.070
10	20.54	30.640	.276				
11	20.48	30.608	.282	Corr. to stand. atmos.			− .033
12	20.10	30.462	.246	Expansion to 15° C.			.273
Means	20.54	30.061	15095.243	Flexure			− .116
				Corrected time			5027.648
Corr. to stand. atmos.			+ .005				
Expansion to 15° C.			− .752				
Flexure			−1.037				
Corrected time			15093.459				

10,000 osc. simple pendulum 10065.819.

In comparing the observations made at Fort Conger with those at Washington I shall make use of a figure of the earth which I have deduced from the totality of the experiments with Kater invariable pendulums down to and including the expedition of Mr. Edwin Smith. In this discussion I have ascertained by least squares that the correction for elevation is 0.00406^s.* The coefficient of $\sin^2 \varphi$ is 225.94^s, and I have also introduced a term in $\sin^3 \varphi - \frac{3}{5} \sin \varphi$, the coefficient of which is 1.22^s, this operating to increase the last effect at the north pole. According to this discussion gravity is in excess at Washington by $+0.76^s$.

Inasmuch as it is certain that the pendulum underwent some alteration between its last swinging at Fort Conger and its swinging at Washington, but of such a nature that the distance between the knife-edges was not altered, we have to compare the periods of the pendulum at the two stations, reduced according to the principle of the reversible pendulum. This period for this pendulum is obtained by adding 8 in the seventh place of decimals to $\frac{3}{2}$ the period of heavy end down, minus $\frac{1}{2}$ the period of heavy end up. This gives, at Fort Conger, 1.0050578^s as the period of oscillation of the simple pendulum of the same length between the knife-edges. We now proceed as follows:

2 log. of period at Fort Conger	+0.0043821
Correction to equator	+0.0022174
Correction from equator and sea-level to Washington	−0.0008904
— station error at Washington	— 76
— 2 log. period at Washington	−0.0056982
— station error at Fort Conger	+0.0000033

It appears from this that gravity is slightly in deficiency at Fort Conger, by only -0.33^s; and since a careful scrutiny of these observations has fully convinced me that they are by far the best that ever have been made within the arctic circle, it is gratifying to find that they satisfy so well the figure already deduced by me, and that they go to confirm the reality of some small harmonic function of the third order, such as that which I have introduced.

* Here, as elsewhere, by 1 second in such a connection I mean one unit in the fifth place of the common logarithm of gravity.

MEMORANDUM BY THE OFFICER COMMANDING THE EXPEDITION.

It only appears proper, in a matter of such importance to the scientific world as the pendulum observations of the Lady Franklin Bay Expedition, that its commanding officer should make some brief statements bearing on the opinions of Professor C. S. Peirce, which are believed to be erroneous. An opinion is expressed on page 702, as follows: "This seems to have been due to a difference of cylindricity of the edges, combined with the effect of some accident to the pendulum." No accident in any way, shape, or manner, occurred to this pendulum. It was never handled by any one in reversion or suspension excepting by myself; so that I can speak with a personal and positive knowledge that the pendulum was never harmed while

EXPLANATORY NOTE.

Mr. Peirce, upon seeing the memorandum by General Greely on page 715, desires to say that he is shocked to find that any words of his are construed as imputing blame—or, indeed, anything less than the highest honor—to General Greely or to Mr. Israel in regard to the treatment of the pendulum apparatus. He therefore asks leave to make the following corrections to his report:

Page 702, third paragraph from the bottom, line 2, before the words "left behind" insert "very properly".

Same page, at the end of the last paragraph but one, insert: It will be seen that I merely set forth the circumstantial evidence in favor of a loss of mass for what it is worth, while limiting myself to the conclusion stated in the first two lines of the third paragraph on page 714. Moreover, whatever may have been the nature of the alteration of the pendulum, I hold, as implied in the sentence above, beginning "It seems almost inconceivable", etc., that it was absolutely unavoidable. Pendulums frequently undergo such changes under the most careful handling.

Mr. Peirce desires further to say that his report contains no kind of reflection upon the management of the Coast and Geodetic Survey, except that it does make a quite unavoidable protest against a certain derangement of apparatus under a former administration of the Survey. Mr. Peirce wishes to say as little as possible about a matter now past and gone; but he must not be understood to admit that the various surmises offered in defense of the act complained of are in accordance with the facts, nor that they would constitute a sufficient vindication even if they were so.

In regard to the many criticisms in this Appendix upon himself, Mr. Peirce will reply to them in another place. He has here only space to remark that the determination of gravity has been signally successful, and that the only doubt which affects the result, namely, that which relates to the temperature-correction, is destined to be resolved in due time by the means indicated toward the end of the second paragraph on page 703.

full statement of such accidents and mishaps enables those discussing the observations to apply suitable corrections, on the other hand any misstatements or denials might result in misleading the zealous student of such observations.

It is admitted that the preliminary observations with this pendulum in Washington, under conditions left entirely to Professor Peirce, were practically failures, through whose fault I know not. To the embarrassments, discomforts, and privations which Mr. Israel and myself (the former very indifferently instructed in pendulum work, and myself without any definite verbal and no written instructions) experienced in making these observations should not be added the charge of having injured the pendulum (which was *never weighed in its finished state until after its return*) and caused a considerable loss of mass without adducing the clearest proof that such mass had been lost while in our possession. These statements of Professor Peirce have been maturely made after being assured by me that no injury came to the pendulum and that no such loss of mass was possible. I leave it to the scientific world to pass on this matter.

A. W. Greely,
Late Commanding Lady Franklin Bay Expedition.

Washington, D. C., *July*, 1888.

I now give a summary of the observations made with this pendulum in Washington in 1884–'85 by me, with the assistance of Mr. W. B. Fairfield.

PENDULUM No. 1.

1884–'85.

At Smithsonian Institution, Washington, D. C.

Heavy end down.				Heavy end up.
No. of swing.	Temperature.	Pressure.	$n T$	No. of

... Conger	+0.0043821
Correction to equator	+0.0022174
Correction from equator and sea-level to Washington	−0.0008904
−station error at Washington	− 76
−2 log. period at Washington	−0.0056982
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It appears from this that gravity is slightly in deficiency at Fort Conger, by only -0.33^{s}*; and since a careful scrutiny of these observations has fully convinced me that they are by far the best that ever have been made within the arctic circle, it is gratifying to find that they satisfy so well the figure already deduced by me, and that they go to confirm the reality of some small harmonic function of the third order, such as that which I have introduced.

* Here, as elsewhere, by 1 second in such a connection I mean one unit in the fifth place of the common logarithm of gravity.

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The statement is also made, that "on the abandonment of Fort Conger, the head upon which the pendulum had been supported in its oscillations (the bearings of the knife-edge forming part of it) was left behind." The metal piece referred to never was, in any way, shape, or manner, alluded to by either the Superintendent of the Coast Survey, the late Carlisle P. Patterson, or Professor Peirce, as being of the slightest utility, and the instructions given me were to the effect that the only important part to be brought back was the pendulum, then soldered in a tin box. If the omission to bring back the plate has any bearing upon these observations, as does not plainly appear from Professor Peirce's remarks, it is simply the fault of either the late Mr. Patterson or Professor Peirce himself.

Later the statement is made, "But, though there was little change in the length of the pendulum, it is evident it lost a large part of its mass." In the very next line it is admitted by Professor Peirce that the pendulum was not weighed at all in its finished state, and that the loss in adjustment, 4.6 grams, was calculated. Consequently the statement that "It (the pendulum) would seem to have lost from ten to fifteen grams, probably on the journey from Fort Conger to Camp Clay," rests on a surmise and an estimate. The pendulum was brought back to Camp Clay soldered in the original metal box, in which it was so carefully packed that no vibratory motion could occur in such manner as to cause loss of weight. The pendulum, although handled hundreds of times, was always treated with special consideration, as was also a box containing photographic negatives; and as an instance of the care exercised with these packages, may be mentioned the fact, that out of forty-eight glass negatives only four were fractured, although necessarily handled scores of times, under circumstances when a moment's delay apparently entailed a loss of boats and life.

It is possible, as suggested in the following Supplementary Report, that during the observations the screws holding one of the pendulum edges in place might have been loosened or tightened, and this seems very probable, as the wrong screw might easily have been touched under the extremely disadvantageous circumstances in connection with the swinging of the pendulum, which was done in an ice-house, where one's breath congealed the moment it left the mouth, and the darkness was broken simply by the light from a single candle so that the temperature of the pendulum might not be affected. On one occasion something of this kind undoubtedly occurred, for the pendulum was stopped after swinging a few minutes, as its arc of oscillation decreased so rapidly as to show conclusively that its vibrations would cease in about one-quarter of the usual time.

It seems but justice to the late Mr. Israel, the astronomer of the expedition, who had charge of the pendulum, both during our stay at Fort Conger and our retreat later, that these statements should be made. Besides, they may have a bearing in other scientific discussions of these observations and so be of a certain importance. It would not be just to those who consult these results to deprive them of the fullest and most complete information on this point. The commanding officer of the expedition has had too much experience with physical observations not to realize the importance of a full and free statement of all the facts in any case. He realizes clearly that accidents and mishaps may occur in any set of observations. While a full statement of such accidents and mishaps enables those discussing the observations to apply suitable corrections, on the other hand any misstatements or denials might result in misleading the zealous student of such observations.

It is admitted that the preliminary observations with this pendulum in Washington, under conditions left entirely to Professor Peirce, were practically failures, through whose fault I know not. To the embarrassments, discomforts, and privations which Mr. Israel and myself (the former very indifferently instructed in pendulum work, and myself without any definite verbal and no written instructions) experienced in making these observations should not be added the charge of having injured the pendulum (which was *never weighed in its finished state until after its return*) and caused a considerable loss of mass without adducing the clearest proof that such mass had been lost while in our possession. These statements of Professor Peirce have been maturely made after being assured by me that no injury came to the pendulum and that no such loss of mass was possible. I leave it to the scientific world to pass on this matter.

A. W. Greely,
Late Commanding Lady Franklin Bay Expedition.

Washington, D. C., *July*, 1888.

ON THE PENDULUM OBSERVATIONS AT FORT CONGER.

SUPPLEMENTARY REPORT BY HENRY FARQUHAR.

U. S. COAST SURVEY OFFICE, *May* 11, 1887.

F. M. THORN, Esq.,

Superintendent U. S. Coast Survey:

DEAR SIR: At your verbal request for a statement of such facts within my personal knowledge as might help to clear up the question of responsibility with regard to certain charges explicitly or implicitly made by Assistant C. S. Peirce against the management of this office in his report on the Pendulum Observations at Fort Conger, I here undertake the task, joining with such statement a presentation, for what it is worth, of conclusions at variance with his on two or three points, and a few notes and additional data that seem to me necessary to make the results of the work as clear as they should be. Mr. Peirce's long familiarity with every detail of gravity determinations, the real additions to general knowledge of the subject that are due to him, the fact that this important part of the activity of the Survey has been from its first inception under his control (all work being performed either by himself or, according to his methods, by observers and computers trained under him), and the further fact that the discussion of this Fort Conger work was expressly given into his charge, have, in your judgment, entitled him to the courtesy of transmitting his report through your hands without amendment. But for the very reason that these causes will give an increased weight both to his reflections on the Bureau and to the conclusions drawn by him from the observations the advisability of testing them by pertinent facts will be recognized.

I. The failure, probably complete, of the observations in room 6 of this building is correctly ascribed to the absence of a reliable determination of the flexure of the support. That the deficiency has been irremediable since the removal of the cap-stone is not denied, though, as the flexure must be largely due to the unfortunate situation of the piers over a brick archway, even this is doubtful. But when it is remembered that in such researches large corrections are usually, especially where their exact determination is difficult, variable corrections, that in this case the yielding is described as having been of such a character as would naturally be produced by a cause like imperfectly-hardened mortar under the recently erected piers, and that it might have become essentially changed by a settling of the archway beneath, an accurate measurement of the flexure at the time of the observations is seen to have been the chief desideratum, and the maintenance of this confessedly unreliable stand to have been of far less importance. Results from a later swinging on the same support would not improbably have been misleading. That observations of flexure were not prevented by lack of time, notwithstanding Professor Peirce's illness at the most unfortunate point, is clear, for the stone was removed in August or September, 1882, the pendulum having been swung from it in June, 1881. And as if to fix the responsibility beyond possible question, Mr. Peirce in this report calls especial attention to the liberal discretion allowed him by Mr. Patterson, who was Superintendent until August, 1881. It is certain that Superintendent Hilgard would not have permitted the removal of the stone had not Mr. Peirce failed to impress upon him the importance of retaining it, or had it been given him to understand that observations essential to the availability of work done months before were yet unmade. The simple truth I believe to be, that because of the want of time for proper preparations, the unsuitability of the place, and the newness of the observer, Mr. Peirce expected no valuable results at the time from the swingings in room 6, and attached no such importance to them as he now appears to attach.

The loss to the service from the necessity of using for the Peirce pendulums a center-of-mass apparatus adapted to a smaller stem Professor Peirce slightly overrates. In consequence of the forced removal of parts of the apparatus the measure is rendered more difficult with the new pendulums; but as two independent determinations of the distance h_m, made last January, gave (when reduced to edge 9 at heavy end) 25.140^{cm} and 25.135^{cm}, it is improbable that the uncertainty of the result can be so great as to admit the earlier value, 25.105^{cm}, as an equally exact observation of the same quantity. I have not examined the 1881 observations with care, but I believe them to have been less complete than those of 1887.

II. The evidence that the pendulum lost half an ounce in weight between 1881 and 1887 is not conclusive. In the first place, the weight of the brass added in construction at the heavy end was originally estimated from its density and calculated dimensions, not found by the balance, and it was pretty certainly less than was intended. By the calculation the center of mass was to have been at one-fourth the distance between the edges, a result which would have been more nearly attained with a heavier load. Secondly, the atmospheric correction applied in the Fort Conger reduction, on which the difference between heavy end down and up depends, is, a few lines below, said to be "involved in some doubt," and is not improbably too small. Thirdly, it is incredible that so considerable a loss could have escaped the notice of Messrs. Peirce and W. B. Fairfield at the time of the Smithsonian experiments. Fourthly, a recent careful examination by Mr. Fairfield and myself shows no sign of it. There was, it may be said, certainly no such loss within 5^{cm} of the knife-edge if the instrument was originally symmetrical. Finally, General Greely is positive in his disbelief that any such disaster could have befallen the pendulum while in his charge.

To show more clearly the true character of the change in the period of oscillation after the interchange of knife-edges, the following table of periods free from difference of edges and atmospheric corrections in general, those of a simple pendulum of length equal to the distance between the two suspensions, as deduced from each set of three swings, is given. This period is equal to

$$\frac{T_d h_d - T_u h_u}{h_d - h_u}\sqrt{1-\frac{(T_d - T_u)^2 h_d h_u}{(T_d h_d - T_u h_u)^2}}$$

in which the factor under the radical may usually be neglected, T_d and T_u being nearly equal. The temperature here equals $\frac{3}{8}$ that at the "down" swings, $-\frac{1}{2}$ the mean at the two "up," in Fahrenheit degrees $+22^{\circ}$. Three reductions are made: $T_{(563)}$ being values obtained from Mr. Peirce's table of "Period corrected" reduced to one temperature and pressure, $T_{(954)}$ resulting from the substitution of a higher rate of expansion, found by least squares on the theory that the change was due to fall of temperature, and $T_{(489)}$ resulting from the use of the coefficient of expansion 17.49^{μ}, 18.24^{μ} being taken as true at $+8^{\circ}$ C. and reduced to -30° C. by Fizeau's equation:

Swings.	Temperature.	$T_{(563)}$	Δ	$T_{(954)}$	Δ	$T_{(489)}$	Δ
	°	s.		s.		s.	
2—1, 3	+12.8	1.0047912	−122	1.0047412	−194	1.0048006	−094
5—4, 6	+11.6	7903	−131	7447	−161	7988	−112
8—7, 9	+11.4	8004	−030	7558	−050	8088	−012
11—10, 13	+ 8.2	8001	−033	7680	+072	8061	−039
17—16, 18	+ 5.9	8247	+213	8017	+409	8291	+191
20—19, 21	+ 6.2	8038	+004	7796	+188	8084	−016
23—22, 24	+ 6.8	8131	+097	7865	+257	8181	+081
26—25, 27	+ 2.8	7325	−191	7216	−392	7346	−165
29—28, 30	+ 0.9	7479	−037	7444	−164	7486	−025
32—31, 33	+ 0.7	7685	+169	7658	+050	7690	+179
35—34, 36	+ 0.9	7605	+089	7570	−038	7612	+101
38—37, 39	+ 0.2	7763	+247	7755	+147	7764	+253
41—40, 42	− 2.9	7461	−055	7574	−034	7440	−071
44—43, 45	− 4.9	7493	−023	7673	+065	7459	−052
47—46, 48	− 3.6	7319	−197	7460	−148	7293	−218
Means	+ 9.0	1.0048034	±031	1.0047608	±037	1.0048100	±027
	− 0.7	47516	±038			47511	±039
Probable error 1 set			±096		±142		±095

In view of the huge value, almost equal to the expansion itself, that has to be given the supposed unknown factor depending on the temperature and not on the vis-viva in order to reconcile the two series of observations, and of its failure to bring them to a satisfactory accord (two swings having less weight, the factor being introduced, than one without it), it appears that the hypothesis of large unknown effects of temperature operating in this way is of no assistance. It is plain, also, that the same difficulties, improbably large hypothetical corrections and greatly increased residuals, must meet any other assumed cause which is gradual and continuous in its operation. "Improvement in the rigidity of the supporting piers," unless by a tightening of screw-taps, etc., at the time of the change (which did not occur), is thus equally excluded as an explanation; also defective elasticity in the brass of the pendulum, through which it does not at once respond to change of temperature. That the change took place abruptly at the time of the transposition, and not a little before and a little after, is about as evident,

indeed, as that it took place at all. The progression that appears in the former half of the results (belonging, it should be observed, entirely to the heavy-end-up swings) is in the wrong direction for continuity, and there is no steady progression in the latter half. The hypothesis of a "difference in the cylindricity of the edges" is suggested by Professor Peirce. If we regard the edges as cylindric, and suppose No. 9 to have had a radius of curvature 29.5^{μ} greater, the difference between first and last values of $T_{(40)}$ disappears. Observations of decrement of arc show a slightly greater friction on edge 9. But this hypothesis requires (see formulæ in Coast Survey Report for 1876, p. 276 [77 of Appendix 15]) a difference between the two edges of 87.4^{μ} about half the measured difference. The supposition of another "accident" at the time of the interchange of edges appears untenable, partly because it is difficult to understand how the instrument could have had two serious accidents without afterward showing a trace of either, and partly because General Greely, in whose presence the interchange was carefully made, testifies confidently that there is no possibility of any such accident.

One explanation remains: That there was a real difference in the length of the pendulum, as swung before and after the interchange. The mean periods in the two positions were for temperature $-22°$ F. and pressure 29.75^{in} (using the coefficient .00000489):

	s.	s.
First days	$T_d = 1.0045145 \pm 10$	$T_u = 1.0039287 \pm 47$
Last days	$T_d = 1.0044656 \pm 20$	$T_u = 1.0039009 \pm 29$
Differences	$.0000489 \pm 22$	$.0000278 \pm 55$
Differences, calculated	.0000560	.0001672

The distance of edge 9 from its bearing-plane, as measured by Dr. J. J. Clark in January, 1887, is 504.0μ, and that of edge 10 is 670.6μ; difference, 166.6μ. Hence is calculated the theoretical decrease in period, entered above; nearly the observed amount for heavy end down and very different for heavy end up. It seems highly probable, therefore, that the edge at the heavy end was farther from the center of mass at the earlier observations than at the later. This edge, that is to say, was loose, so as to have a play of an eighth of a millimeter on the average until the transposition was made, and was properly tightened after it. Inspection of the earlier heavy-end-up corrected periods plainly suggests (when the lower expansion-coefficient is used more plainly yet) that the play of this edge may have increased progressively, as they show a pretty steady diminution. The effect of removing the heavy-end knife-edge, of a mass equal to $\frac{100}{10436}$ that of the pendulum, by a distance $\varDelta(h_d+h_u)=x$ from the other edge will be to increase h_d by $150x : 10436$ and h_u by $10286x : 10436$; $\varDelta(\gamma_d^2)$ may be taken equal to $150 : 10436$ of $2r\varDelta r$ (r being the distance of the center of the shifted mass from the other edge) and hence to $100.9 \times 150x : 5218$; $\varDelta(\gamma_u^2) = \varDelta(\gamma_d^2 - h_d^2 + h_u^2)$ will then be $[(100.9 - h_d)\,150 + 10286h_u]\,x : 5218$. Substituting these values in

$$\varDelta T = \frac{T}{2}\left(\frac{\varDelta(\gamma^2)}{\gamma^2} - \frac{\varDelta h}{h}\right)$$

we find $\varDelta T_d = +.00010x$ and $\varDelta T_u = -.00963x$. Taking $x = 0.01188^{\text{cm}}$, and correcting the periods before interchange accordingly, we have $T_d = 1.0045133^{\text{s}}$, $T_u = 1.0040431^{\text{s}}$, and $T_{(40)}$ the same as the later value 1.0047511^{s}. The differences between the periods for first and last days will thus become 0.0000477^{s} and 0.0001422^{s}, one-seventh less than those calculated from measurement of the edges.

A loosening of the heavy-end edge, after the measures made in 1881, might have taken place in one of several conceivable ways. The observer, whose zeal and industry surpassed his experience, could have turned one of the screws holding this edge in place, about the beginning of the experiments, mistaking it for a similar screw by which the pendulum is raised or lowered. An artisan, in packing the instrument, could accidentally have touched the screw. Dirt of some kind could have remained on one of the brass slides holding the edge in place (a recent examination shows that the slide at the name end of the heavy edge-holder is considerably stained with rust, verdigris, etc., over its inner surface, which may be a trace of it) and this dirt not have been squeezed out till after the measures of length (June 11 to 14, 1881, before the pendulum had been swung even in Washington), but become so, gradually perhaps, before the edges were transposed. Without committing ourselves to any one of these possible explanations, we must admit that the hypothesis of a slight loosening of one edge during the first swings is the only one yet suggested that seems to meet the facts.

Attention should be called to a point that seems to be plainly brought out in these swingings: The considerable difference between the atmospheric viscosity, as deduced *a priori* by Professor Peirce, and used in correcting for pressure, and the resistance proportional to first power of amplitude deduced from the observations. For the Repsold pendulum, at widely different pressures and temperatures, the coefficient of this resistance for "heavy end up" was found to agree with the formula $b = .0013\tau^{\frac{1}{2}} + .02368p^{\frac{1}{2}}\tau^{-\frac{1}{2}}$, the unit of p being a standard atmosphere, of τ 288° C., the temperature having been increased by 273°, and of b the reciprocal of a minute. The second coefficient, divided by 60π, was used as the coefficient of the effect of the viscosity on the period. In this reduction the viscosity coefficient for heavy end up is 0.0000994, and

the average b is .02536 (min)$^{-1}$; $\tau^{\frac{1}{2}} = 0.8885$, $\tau^{-\frac{1}{2}} = 1.020$ and $p^{\frac{1}{2}} = 1.004$. $0.0000994 \times 60\pi \times 1.020 \times 1.004 = 0.01921$, a value for the second part of b little over four-fifths of that in the Repsold pendulum, which seems to require that the first coefficient be 0.0069, more than five times as great, to produce 0.02536. As such a difference between the two pendulums, due to atmospheric viscosity alone, is not easily credible, it seems clear that an important part of this resistance is due to some other cause, as indeed Professor Peirce suspects. In the Fort Conger observations, although, as the table of calculated $1 : b$ shows, nearly uniform throughout, the resistance was certainly greater than in this building seven months before, where this quantity was 41^m or 43^m with heavy end up, and 123^m or 130^m with heavy end down. Much of this difference is due to the value of the quantity c, the coefficient of resistance proportional to square of velocity, employed. The heavy-end-up swings at Fort Conger gave 0.075 for $b : c$, and the heavy-end-down 0.048; the constant value 0.056, a weighted mean, was used in the reduction. Substituting the value 0.0413, used in the earlier reductions, these swings are best satisfied by taking $1 : b = 42.2^m$ and 120.7^m on the average, the heavy-end-down value showing a decidedly more rapid rate of decrement. Mr. Peirce deduces for the pendulums of this pattern, using $b : c = 0.0413$, a value of 130.3^m with heavy end down, thus making the Fort Conger decrement appear still more abnormally rapid. That the higher degree of resistance thus unmistakably indicated may have had some influence on the period of oscillation is altogether probable. Supposing that the period was thereby shortened, and applying to each heavy-end-down period, except in swing 14, a plus correction of 0.013^s times the excess of the b deduced for each swing over a standard value, the agreement of the separate results is perceptibly improved. To bring swing 14 into agreement with the others a coefficient of $+0.050^s$ is required. The heavy-end-up swings, after the interchange of edges, are improved by a correction in this direction; not so those before interchange, except the aberrant swings 12 and 15. The former of these indicates a correction of $+0.041^s \, \Delta b$, while the arc observations in swing 15, not being satisfied by increase of the coefficients b and c, as are 14 and 12, show that the resistance, whatever it was, was in this swing irregular. The calculated values of $1 : b$ are in general smaller, indicating greater resistance when the pendulum is suspended from edge No. 9 in either position, but very slightly so, so that no empirical correction of this nature is found to have an appreciable effect in explaining away the apparent decrease of length in the pendulum at the time of the change of edges, and we are left to believe that such decrease actually occurred.

The probability of a loose knife-edge is the real justification of the course properly followed by Mr. Peirce in depending on the latter half of the observations alone for a value of gravity. One correction to his final result appears, however, to be needed: An increase of the expansion allowance by 0.0000074^s. He states that his expansion "coefficient 18.24^μ is for the temperature of 24.6° C.," apparently because the comparisons between Pendulum No. 1 and Meter B were made about that temperature. But the observations of Meter A, on which the adopted coefficient for B depends, were made (1876 Report, page 274) about 8° C.; taking this as the temperature at which the coefficient 18.24^μ holds good, we have as the value for $-7.7°$ C. 17.93^μ. Increasing T_d, T_u, and the "reversible pendulum" period by 0.0000074^s, we must increase the double logarithm by 0.0000064, when the "station error" becomes -0.0000097, and the conclusion in favor of a term in odd powers of the sine of the latitude is correspondingly weakened. It should be remembered that this result is subject to three uncertainties: Whether the latter observations were alone made with a pendulum of the length found in 1884; whether, in correcting periods of the simple pendulum for temperature, allowance for the expansion of the metal is sufficient, and whether the unusually rapid decrement of arc at this station was due to a cause that left the period unaffected. Another point, which does not appreciably affect this result, is nevertheless worth noting. If the reversible-pendulum period equals $(74.914\,T_d - 25.160\,T_u) \div 49.754$, $\frac{3}{2}T_d - \frac{1}{2}T_u$ must be increased by $0.0057(T_d - T_u) = 0.0000040^s$ at the Smithsonian, 0.0000037^s at Fort Conger. This might be diminished by 2 in the seventh place to allow for the factor under the radical in the first formula above. Professor Peirce, at the end of his report, uses a quite different correction.

III. The additional tables here submitted are:

(1) A discussion of the time observations on which depends the rate of the chronometer used.

(2) The times of reaching successive thousandths of radius in observations of decrement of arc. These are taken directly from the records left by Mr. Israel.

(3) A general summary of the results for time of infinite arc, mean of right and left readings, for four arcs at about equal intervals of time, by preliminary assumed values of b^{-1} and by corrected values of b^{-1}; t_∞ having weights equal to 35, 42, 6, and 1 for the four arc-readings selected the correction to b^{-1} is found from the excesses of the separate t_∞ over their weighted mean, being $\frac{1}{7}$ the last excess $+\frac{3}{7}$ the third $+\frac{6}{7}$ the second $-\frac{10}{7}$ the first. The agreement of the four values of t_∞ would obviously be improved if a correction of bc^{-1} (the constant value 0.056 being used in the calculation) were also introduced; but the exactness attained is sufficient for the arc correction.

(4) A more complete presentation of the center-of-mass observations made in January last.

Yours, very respectfully,

HENRY FARQUHAR.

COMPUTATION OF TIME FROM TRANSIT OBSERVATIONS AT FORT CONGER.

(December 28, 1881, to February 4, 1882, inclusive.)

Two independent computations have been made. In the second computation the azimuth was assumed constant for several sets during five periods, the weighted mean of the values obtained separately for each set being used in reducing all sets in the period. In the least-square work the weights multiplied by $\sec^2\delta\,(wC^2)$ were first found, and the weight of the star-observation in determining the time correction (w) obtained by multiplying this by $\cos^2\delta$. The weights were obtained by the method of Mr. Schott's pamphlet (U. S. Coast Survey Report for 1880, Appendix 14).

As the errors of observation and of reading the sheets (in most of the observations; in a few cases the sheets were accessible and the latter class of errors corrected by a second reading) were abnormally large, a special computation of the error of transit over a thread was required; for that purpose all the incomplete transits in which the star was observed across 2—4 threads (the mean of the threads having been calculated separately for each thread observed) were taken and the me^2 for the star found by dividing the sum of the squares of the individual discrepancies by the number of threads observed, less one. Means of values of me^2 were found, if there was more than one for a given value of $\sec^2\delta$. Reductions for the observer's reading of chronograph sheets and for the second reading were made separately.

The following table shows the results of this work, the column "do. calc'd" being derived from the formula

$$\overline{me}^2 = 0.1 + 0.3\sec^2\delta$$

The values for "second readings" correspond to about one-third of these, as is also shown in the table. Second readings were therefore given treble weight without further investigation. The number of cases in which these readings showed an error of one or two entire seconds in the observer's readings proved that there ought to be a considerable difference in the weight allowed the two.

For an equatorial star $\overline{me}^2 = 0.4 \therefore \varepsilon^2 = 0.18$; and assuming for ε four times the Naval Observatory value (Appendix 14, page 38) we have $\varepsilon_1 = 0.136^s$ and $\varepsilon_1^2 = 0.018$.

Hence the weight of an incompletely-observed star appears to be inversely as $0.018 + \frac{0.18}{N}$ or $1 + \frac{10}{N}$. In the case of second readings this quantity becomes $1 + \frac{10}{3N}$.

The weights used in computation were

$$wC^2 = \frac{12}{(3 + \cos^2\delta)\left(1 + \frac{10}{N} \text{ or } 1 + \frac{10}{3N}\right)}$$

Transit observations at Fort Conger. Mean error of a single thread.

Sec² δ.	First reading.		do. calc'd.	÷3	Second reading.	
	No. obs.	$\overline{me}^2$			$\overline{me}^2$	No. obs.
1.0	2	0.41	0.40	0.13	0.05	1
1.1	2	0.58	0.43	0.14	0.18	2
1.2	5	0.73	0.46			
1.3	5	0.30	0.49			
1.4	1	0.24	0.52	0.17	0.45	1
1.6	1	0.01	0.58			
1.7	2	0.26	0.61			
1.8	1	0.64	0.64			
2.0	5	0.91	0.70	0.23	0.03	2
2.1	3	1.06	0.73	0.24	0.14	2
2.2	3	0.75	0.76			
2.3	1	0.76	0.79			
2.7			0.91	0.30	0.41	1
4.6	1	0.39	1.48			
6.1	2	0.28	1.93			
6.9	1	0.40	2.17			
8.0	1	1.37	2.50			
8.5	1	0.88	2.65			
10.8	1	1.65	3.34			
13.5	1	4.95	4.15			
14.2	3	6.25	4.36			
20.9	1	6.39	6.37			
33.9	1	13.36	10.27			

The thread intervals were deduced from a discussion of all the stars completely observed during the period, second readings being given treble weight. They are, for illumination west:

	s.
1	− 44.455
2	− 22.019
3	− 0.162
4	+ 21.919
5	+ 44.717

The following tables show the residuals in detail, with the value of the inclination for each star:

Date.	Star.	Level.	wC^2	Res.
		s.		s.
Dec. 28	α Cygni	—.18	1.1	—1.31
	Gr. 3373	—.13	.7	+9.01
	α Cephei	—.45	1.1	+ .63
	ε Pegasi	—.23	1.0	+ .42
Jan. 6	κ Cephei	—.11	.9	—1.82
	α Cygni	—.07	1.0	+ .08
	ζ Cygni	+.01	1.1	+ .52
	α Cephei	[+.01]	1.2	—1.23
Jan. 7	α Persei	+.03	1.2	— .49
	η Tauri	+.06	1.0	+ .72
	α Tauri II	—.05	1.8	— .55
	α Camelop. II	—.59	2.3	+1.20
Jan. 7	η Urs. Maj. II	—.06	2.1	— .72
	η Bootis II	[—.06]	1.9	+ .42
	α Drac. II	—.10	.9	—1.56
	α Bootis II	—.16	1.9	+ .16
Jan. 8	ϑ Persei	—.05	1.2	+ .11
	α Ceti	—.02	.7	.00
	α Persei	+.35	1.2	+ .67
	η Tauri	+.68	.9	— .40
Jan. 8	20 Can. Ven	—.28	1.0	....
Jan. 9	α Persei	—.14	1.2	+ .28
	η Tauri	+.05	1.0	— .20
	ε Persei	+.21	.8	+ .10
Jan. 10	α Aurigæ II	+.59	1.9	— .77
	α Orionis II	—.23	1.8	+ .57
	β Aurigæ II	[—.23]	1.6	— .16
	η Gemin. II	+.07	1.9	— .04
	ε Bootis	—.01	1.1	.00
	β Urs. Maj	—.03	.9	+ .08
	δ Bootis	+.03	.9	+ .07
Jan. 11	δ Persei	—.15	1.2	— .54
	ε Persei	+.19	.9	+ .57
	α Tauri	+.05	1.0	+ .36
	α Aurigæ	+.05	1.1	— .49
Jan. 11	η Urs. Maj. II	+.03	2.1	+ .23
	α Drac. II	—.10	2.3	+ .95
	α Bootis II	[—.10]	1.2	— .51
Jan. 13	α Tauri	—.02	1.5	+ .99
	α Aurigæ II	—.07	1.9	—1.20
	β Tauri II	+.05	1.9	— .34
	22 Camelop. II	+.02	2.3	+ .66
Jan. 13	ε Bootis	—.26	1.1	— .33
	β Ursæ Maj	—.41	1.1	+3.02
	δ Bootis	[—.41]	1.1	— .19
	α Coron. B	—.10	.9	+ .37
Jan. 17	α Tauri	—.08	.3	—1.45
	α Camelop	—.04	.9	+2.84
	ι Herculis L	+.24	1.2	+1.60
	α Orionis	[—.05]	1.0	+ .18
	β Aurigæ	—.05	.6	—1.16
	α Lyræ L	[—.17]	1.1	— .19
	ε Geminorum	—.30	.9	— .85
Jan. 17	ε Bootis	—.15	1.1	+ .03
	β Ursæ Min	—.17	1.1	+1.79
	α Persei L	—.67	1.2	+ .63
	α Coron. B	—.46	1.1	— .31
	τ Herculis	—.58	1.2	— .41
Jan. 18	γ Tauri	+.11	.9	+1.15
	α Tauri	[+.33]	1.0	+ .78
	α Camelop	+.55	1.3	—1.39
	ι Herculis L. II	—.01	2.1	—1.05
	α Orionis II	[—.02]	1.4	— .19
	β Aurigæ II	—.03	1.6	— .15
Jan. 18	α Coron. B. II	—.23	1.9	— .42
	ζ Persei L. II	—.10	1.2	+ .72
	φ Herculis II	+.14	2.1	— .29
	η Herculis II	+.38	2.0	+ .27
Jan. 19	β Tauri II	—.06	1.9	— .32
	β Draconis L. II	—.37	1.9	+ .83
	α Orionis II	+.01	1.8	+ .68
	β Aurigæ II	[+.01]	.8	— .64
	ο Herculis L. II	+.21	1.9	— .12
	μ Geminorum II	+.03	1.9	— .55
Jan. 19	γ^2 Urs. Min	[—.19]	1.3	+4.11
	α Coron. B	—.19	1.1	—1.08
	ζ Persei L	—.36	1.1	+ .40
	τ Herculis	+.07	1.0	+ .24
Jan. 20	υ Orionis	—.43	1.0	— .05
	η Geminorum	[—.29]	1.0	+ .22
	μ Geminorum	—.14	.9	— .19
	γ Geminorum	+.23	.7	— .03
Jan. 20	β Persei L	+.06	1.1	— .08
	γ^2 Urs. Min	—.22	1.1	+3.12
	α Coron. B	[—.22]	1.1	— .65
	δ Persei L	—.10	.8	— .03
	ε Coron. B	—.10	.7	+ .23
	τ Herculis	—.10	.8	+ .43
Jan. 21	ι Herculis L	—.23	1.2	— .85
	α Orionis	+.25	1.0	— .53
	β Aurigæ	—.10	.8	+ .91
	ν Orionis	+.07	1.0	+ .42
	η Geminorum	[—.03]	.7	— .57
	μ Geminorum	—.14	1.0	+ .72
Jan. 21	δ Bootis	+.11	1.1	— .55
	γ^2 Urs. Min	—.35	1.3	+ .67
	α Coron. B	—.38	1.1	+ .20
	δ Persei L	—.02	1.0	+ .10
	ε Serpentis	[+.11]	.9	+ .13
	ε Coron. B	+.23	.7	— .01
Jan. 23	β Geminorum	+.09	.8	+ .08
	ε Draconis L	—.13	1.3	+1.16
	ε Hydræ	+.13	1.0	+ .05
	ι Urs. Maj	+.03	1.2	— .38
Jan. 23	γ Draconis	—.33	1.2	+ .01
	μ Geminorum L	—.22	1.0	+ .01
	α Lyræ	—.53	.8	— .02
	β Lyræ	[—.53]	1.1	+ .05
Jan. 25	α Camelop	+.64	.6	—1.42
	α Aurigæ	+.55	1.1	— .47
	β Tauri	+.58	.9	+ .67
	α Orionis	[+.69]	1.0	+ .01
	β Aurigæ	+.69	.6	— .46
Jan. 25	δ Bootis	—.02	1.1	— .24
	γ^2 Urs. Min	+.17	1.3	+1.16
	α Coron. B	—.05	1.1	+ .05
	ε Coron. B	—.27	1.1	+ .03
	ζ Persei L	—.27	1.2	— .22
	τ Herculis	—.22	1.0	+ .08
Jan. 26	ι Herculis L	—.24	1.2	+ .22
	α Orionis	—.11	1.0	+ .15
	β Aurigæ	—.22	.6	—1.10
	22 Camelop	—.03	.9	+3.93
	μ Geminorum	+.19	.5	—1.60
	χ Draconis L	—.02	1.3	+2.53
Jan. 26	β Bootis	—.05	.6	+ .17
	β Persei L	[—.02]	1.1	— .44
	δ Bootis	+.01	1.1	— .32
	γ^2 Urs. Min	—.44	1.3	+2.34
	α Coron. B	—.11	1.1	— .28
	δ Persei L	[—.11]	1.2	+ .73
Jan. 29	α Geminorum	—.49	1.1	— .03
	α Canis Min	[—.49]	1.0	+ .27
	β Geminorum	[—.09]	1.1	— .48
	Gr. 1374	—.09	.9	+2.79
Feb. 4	σ^2 Ursæ Maj	—.39	.6	+ .20
	α Cephei L	—.34	1.2	+1.36
	ε Leonis	[—.32]	1.0	+ .04
	α Leonis	—.31	1.0	+ .20
	γ^1 Leonis	—.21	1.0	+ .19
	δ Leonis	—.65	1.0	—1.34
	λ Drac	—.85	1.1	+1.33
	λ Androm. L	[—.80]	1.2	— .01
	χ Ursæ Maj	—.75	1.0	+ .44

Time observations. Summary of results.

Epoch, sidereal time.			Azimuth. Computed.	Azimuth. Used.	Collimation.	Correction to 2490.		Rate $+0.1^s$ applied.		Rates applied $\{+.1052^s, +.122^s\}$		Residuals.
		h.	*s.*	*s.*	*s.*	*h. m.*	*s.*	*h. m.*	*s.*	*h. m.*	*s.*	*s.*
Dec.	28	21.4	—467.5	—440.2	—6.28	+1 48	59.11	+1 49	4.17	+1 49	4.73	—1.72
Jan.	6	20.8	434.2	440.2	6.08	49	21.70		5.22		4.36	—2.09
	7	4.0	445.3	440.2	5.65		26.25		9.05		8.16	+1.71
	7	13.9	429.0	440.2	5.68		26.77		8.56		7.61	+1.16
	8	3.1	444.8	440.2	5.42		28.82		9.31		8.30	+1.85
	8	13.2		440.2	5.6		30.03		9.51		8.44	+1.99
	9	3.7	445.3	440.2	5.81		34.46		12.49		11.35	+4.90
	10	5.9	—454.8	—461.8	—5.46		31.67		7.08		5.80	— .65
	10	15.0	462.0	461.8	5.66		32.49		6.99		5.66	— .79
	11	4.3	453.1	461.8	5.87		33.37		6.54		5.14	—1.31
	11	13.9	467.6	461.8	2.31		35.20		7.41		5.96	— .49
	13	5.2	458.6	461.8	3.33		38.91		7.19		5.54	— .91
	13	15.2	470.9	461.8	3.84		39.84		7.12		5.42	—1.03
	17	5.6	—495.4	—497.3	—2.97		52.95		11.59		9.44	+2.99
	17	15.7	496.2	497.3	3.24		52.67		10.30		8.10	+1.65
	18	5.1	499.2	497.3	2.55		52.89		9.18		6.91	+ .46
	18	15.8	490.3	497.3	3.57		52.33		7.55		5.22	—1.23
	19	5.9	493.4	497.3	3.21		54.03		7.84		5.44	—1.01
	19	15.9	502.6	497.3	3.73		55.14		7.95		5.50	— .95
	20	6.3	485.2	497.3	3.32		56.00		7.37		4.84	—1.61
	20	15.6	499.8	497.3	3.31		58.04		8.48		5.90	— .55
	21	5.9	504.5	497.3	3.35	50	1.10		10.11		7.46	+1.01
	21	15.5	497.7	497.3	3.85		0.15		8.20		5.50	— .95
	23	8.5	494.4	497.3	3.76		5.65		9.60	48	57.27	— .27
	23	18.4	497.6	497.3	3.31		6.52		9.48		56.93	— .61
	25	5.4	—480.9	—487.8	—4.25		11.85		11.31		57.99	+ .45
	25	15.7	489.2	487.8	3.44		12.75		11.18		57.63	+ .09
	26	6.0	486.5	487.8	3.89		14.94		11.94		58.08	+ .54
	26	15.3	488.9	487.8	3.72		15.03		11.10		57.04	— .50
	29	7.5	—503.9	—497.6	—4.16		24.70		14.34		58.86	+1.32
Feb.	4	10.5	496.8	497.6	3.55		40.79		15.74		57.03	— .51

The correction to 2490, the chronometer used in the time observations, has, first, the uniform hourly rate of $+0.1^s$ applied, and a more exact rate is found by a least-square calculation. The observations are divided into two parts, those up to and those after the second set on January 21. The results

$$\text{cor}= \begin{cases} +1^h\ 49^m\ 6.45^s + 0.1052^s \text{ (time in hours from January 0, } 0^h\text{) to January 22, at } 2^h \text{ sid. t.} \\ +1^h\ 48^m\ 57.54^s + 0.122^s \text{ (time in hours from January 0, } 0^h\text{) after January 22, at } 2^h \text{ sid. t.} \end{cases}$$

are tested by comparisons with the observations on the last column above.

The residuals found do not generally exceed the probable errors of observation, and the irregularities indicated are shown by comparison of other chronometers to be either (1) the effect of some cause affecting all of them nearly equally in the same way, or (2) errors in the time observations themselves. The second view is preferred, and the two uniform rates of $+0.1052^s$ and $+0.122^s$ therefore adopted.

In working out the chronometer comparisons the mean chronometer (No. 124) was treated as a sidereal chronometer having a high rate, and the corrections of all the chronometers were reduced to something near constancy by the application of uniform rates. The going of all five chronometers after the application of these uniform rates, as also the changes in the azimuth, are shown in the accompanying illustration.

Seven errors in the comparisons receive hypothetical corrections in the reduction.

Time observations, errors of chronometers, and application of uniform rates.

Epoch, sidereal time.		No. 124. Correction (from 2490).	No. 124. Rate + 9.88s applied.	No. 310. Correction (from 124).	No. 310. Rate + 0.05s applied.	No. 198. Correction (from 124).	No. 198. Rate – 0.04s applied.	No. 1425. Correction (from 124).	No. 1425. Rate + 0.26s applied.
	h.	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*	*h. m. s.*
Jan. 1	3.7	+2 31 37.79	+2 26 64.11	+2 35 37.80	+2 35 36.42	−4 22 46.60	−4 22 45.49	−4 2 9.88	−4 2 17.10
6	19.2	49 48.68	53.38	42.07	35.11	61.05	55.48	1 40.12	16.32
6	14.5	52 57.63	51.65	42.80	34.88	61.94	55.60	30.28	11.52
7	2.0	54 53.14	53.54	46.03	37.53	60.71	53.91	28.33	12.54
7	14.7	56 57.94	52.86	46.78	37.65	60.35	53.04	25.51	13.04
8	1.9	58 49.01	53.28	47.96	38.27	60.77	53.01	23.05	13.48
8	13.7	+3 0 45.10	52.78	48.68	38.40	61.32	53.09	19.41	12.89
9	2.6	2 55.37	55.60	52.23	41.30	59.94	51.20	13.91	10.77
9	16.1	5 6.31	53.16	[1]50.81	39.21	23 2.82	53.54	12.99	13.35
10	2.5	6 46.57	50.67	48.83	36.71	6.99	57.29	13.25	16.32
10	15.8	8 57.30	50.00	48.24	35.45	8.70	58.47	10.41	16.94
11	2.7	10 44.82	49.82	48.42	35.09	9.76	59.09	7.40	16.77
11	14.6	12 42.93	50.36	49.33	35.40	9.53	58.39	[2]3.50	15.96
13	3.2	18 44.47	50.29	50.67	34.91	15.23	62.62	0 54.02	16.00
13	15.9	20 49.36	49.71	51.12	34.73	16.02	62.90	51 [illegible]	17.24
16	6.5	31 11.01	52.87	56.82	37.30	20.64	65.02	53.54	15.11
17	2.7	34 31.75	54.03	59.32	38.79	22.02	65.59	29.24	16.03
17	17.7	36 58.46	52.54	58.36	37.08	22.85	65.82	28.09	18.78
18	2.9	38 28.76	51.95	58.13	36.39	24.13	66.73	26.66	19.75
18	17.8	40 53.98	49.96	56.70	34.21	25.20	67.21	25.15	22.10
19	4.8	42 42.95	50.25	57.47	34.43	25.60	67.17	21.78	21.62
19	17.0	44 42.93	49.69	58.82	35.17	24.89	65.97	18.99	21.97
20	5.5	[3]46 46.20	49.46	57.98	33.71	25.92	66.50	16.25	22.48
20	17.1	48 41.80	50.45	59.34	34.49	24.49	64.61	12.59	21.86
21	4.8	50 38.93	51.99	[4]61.24	35.80	23.36	63.01	7.97	20.28
21	16.2	[5]52 29.55	49.97	59.61	33.60	24.91	64.10	7.22	22.49
23	7.2	58 56.15	51.25	[6]36 3.10	35.14	26.14	63.77	3 59 55.48	20.91
23	19.1	+4 0 53.04	50.57	3.32	34.77	25.60	62.76	52.67	21.17
24	5.6	2 37.36	51.15	4.51	35.43	25.29	62.03	49.19	20.44
25	4.0	6 20.00	52.48	4.74	34.54	24.68	60.52	42.97	20.02
25	16.6	8 23.70	51.69	7.04	36.21	24.25	59.59	[7]39.95	20.29
26	4.8	10 25.01	52.47	8.41	36.97	24.13	58.98	35.89	19.40
26	16.2	12 16.19	51.01	7.86	35.85	23.57	57.96	34.01	20.47
28	6.6	−[8]2 31 3.36	−4 22 47.93	12.53	38.60	25.06	57.92	20.94	17.38
29	5.9	27 12.20	46.97	13.43	38.34	23.11	55.03	13.69	16.23
29	15.4	25 38.20	46.83	14.06	38.49	22.55	54.09	11.19	16.16
31	6.8	19 8.81	46.71	16.23	38.69	25.24	55.21	58 59.03	14.26
Feb. 4	8.2	3 4.76	44.98	21.21	38.80	32.40	58.47	34.52	15.07

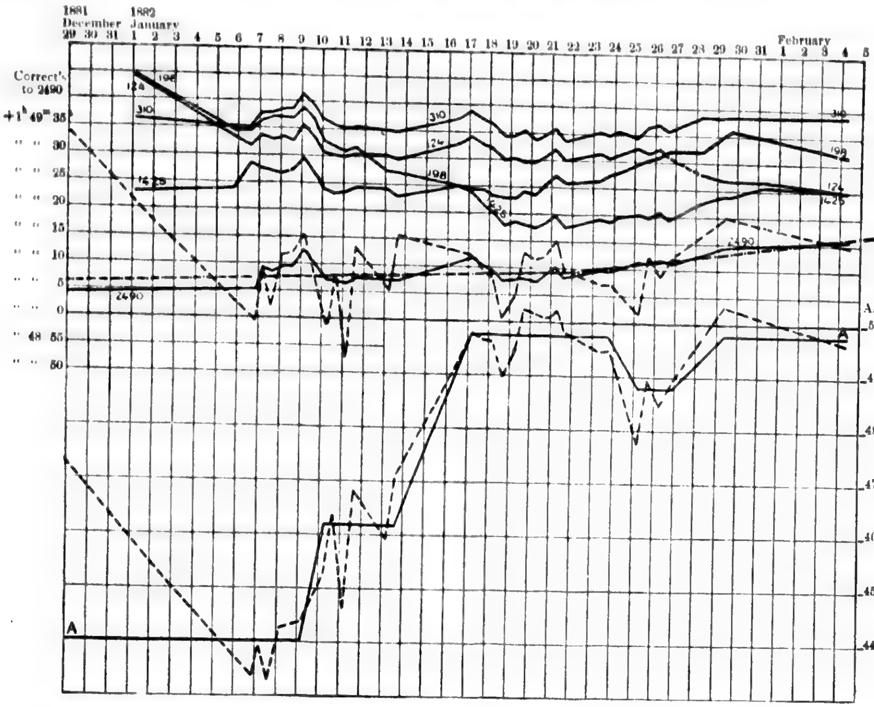
[1] 310 supposed 20m out.
[2] 1425 supposed 5m out.
[3] Seconds of chronometers supposed interchanged.
[4] 310 supposed 10s out.
[5] 124 supposed 10s out.
[6] 310 supposed 1m out.
[7] 1425 1h out.
[8] 124 allowed to run down on the 27th.

425.

Rate + 0.26s applied.
h. m. s.
−4 2 17.10
16.32
11.52
12.54
13.04
13.48
12.89
10.77
13.35
16.32
16.94
16.77
15.96
16.00
17.24
15.11
16.03
18.78
19.75
22.10
21.62
21.97
22.48
21.86
20.28
22.49
20.91
21.17
20.44
20.02
20.29
19.40
20.47
17.38
16.23
16.16
14.26
15.07

h.

Diagram, showing the errors of five chronometers after applying uniform rates, also the value of the azimuth, during observations for gravity, at Fort Conger, Grinnell Land, January, 1882.



——— *Azimuths uniform during five Periods, Corrections to Chronometer 2490 found on this Assumption, and Corrections to the other Chronometers on the Assumption that 2490 moves uniformly between Star-Observations, as then determined.*

- - - - - *Azimuths as originally calculated, and Corrections to 2490 on this Assumption. Also calculated Corrections to 2490, on the Supposition of uniform Rates before and after Jan. 22, 2h S. T.*

Pendulum at Fort Conger. Arc observations. Times of reaching successive thousandths of radius on each side.

Swing and face ...	1 *B*		2 *B*		3 *F*		4 *F*		5 *F*		6 *B*		7 *B*		8 *F*	
Date	Jan. 6, 11^{h} to 12^{h}.		Jan. 6, 1^{h} to 4^{h}.		Jan. 6, 5^{h} to 6^{h}.		Jan. 7, 10^{h} to 11^{h}.		Jan. 7, 12^{h} to 2^{h}.		Jan. 7, 4^{h} to 5^{h}.		Jan. 8, 10^{h} to 11^{h}.		Jan. 8, 11^{h} to 2^{h}.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	----	34.8	58.5	----	----	23.1	----	----	----	17.2	07.2	06.5	----	01.3	42.3	44.8
.029	----	----	01.5	----	24.0	----	----	----	19.5	----	08.2	07.6	----	----	----	46.4
.028	----	----	04.5	----	----	25.0	----	----	22.3	21.4	09.2	08.6	02.0	02.8	47.1	48.7
.027	36.9	----	07.6	01.0	25.9	----	----	----	24.5	23.3	----	09.9	03.3	03.9	49.2	51.7
.026	----	38.3	10.7	04.0	----	26.9	24.5	23.3	27.7	26.8	10.8	----	04.4	04.9	52.2	55.0
.025	38.8	----	----	06.9	27.7	----	25.5	----	31.2	30.2	----	12.0	05.3	05.8	55.7	----
.024	----	----	----	10.1	----	----	----	----	----	----	----	----	----	----	----	00.9
.023	----	----	17.5	----	----	----	----	----	37.5	36.7	----	----	----	----	01.6	04.2
.022	----	----	21.5	18.4	----	----	----	----	41.2	40.0	----	----	----	----	04.5	07.0
.021	----	----	25.9	22.2	----	----	----	----	44.4	43.4	----	----	----	----	07.8	11.5
.020	----	44.9	29.6	26.3	----	34.0	31.2	----	48.4	47.2	18.0	17.4	10.7	11.7	11.9	16.2
.019	46.0	----	34.0	30.0	35.2	35.9	----	----	52.4	51.1	19.1	18.4	12.2	13.2	16.9	21.2
.018	----	47.9	38.5	34.3	36.4	37.2	34.7	32.5	57.4	56.2	20.7	20.0	13.8	14.8	21.8	26.5
.017	49.1	----	43.2	39.0	38.1	38.9	36.2	----	02.3	00.9	22.2	21.9	15.6	16.5	26.9	31.6
.016	----	51.4	48.7	43.7	39.8	40.8	37.9	35.5	07.4	05.6	24.5	23.4	17.3	18.2	32.0	36.7
.015	52.7	----	53.3	49.2	41.8	43.0	39.7	36.8	12.8	10.6	26.6	25.6	19.3	20.3	37.2	43.2
.014	----	55.4	59.2	53.7	44.2	45.6	42.2	39.0	18.3	16.8	28.6	27.5	21.4	22.3	43.7	49.3
.013	56.8	----	07.4	59.9	46.6	47.8	44.3	41.0	27.0	23.3	31.1	29.7	23.7	24.9	50.0	57.4
.012	----	00.2	14.3	07.9	48.7	50.0	47.0	43.0	34.8	31.6	33.8	32.4	26.3	27.6	57.9	05.2
.011	03.0	03.5	22.4	14.9	51.2	53.0	49.8	45.2	43.3	40.7	37.0	35.3	29.1	30.5	05.6	14.2
.010	05.7	06.3	32.0	24.0	54.9	56.2	53.1	48.6	51.5	50.0	40.9	39.2	32.0	33.3	14.7	24.0
.009	08.4	09.3	43.0	34.1	58.6	00.1	56.5	51.8	02.4	00.1	44.4	42.6	35.6	37.2	24.6	35.7
.008	12.1	13.1	54.9	45.5	02.2	04.2	00.9	55.7	13.0	11.2	48.8	46.6	39.7	41.4	36.1	47.8
.007	16.3	17.9	07.4	57.2	06.7	09.1	06.0	59.9	24.8	22.5	53.7	50.8	44.2	46.4	48.5	02.2
.006	21.3	22.7	23.3	11.0	12.0	13.8	11.2	04.1	39.5	36.2	58.9	56.2	49.4	52.0	02.9	17.2
.005	26.2	28.5	46.7	27.3	17.3	----	17.0	09.8	58.3	52.5	05.5	01.8	55.8	----	17.9	34.9
.004	34.0	36.3	----	----	25.0	----	----	----	----	----	12.4	----	02.1	----	----	----
.003	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Swing and face ...	9 *B*		10 *B*		11 *F*		12 *F*		13 *F*		14 *B*		15 *F*		16 *F*	
Date	Jan. 8, 2^{h} to 3^{h}.		Jan. 9, 10^{h} to 11^{h}.		Jan. 9, 11^{h} to 2^{h}.		Jan. 9, 3^{h}.		Jan. 10, 12^{h} to 1^{h}.		Jan. 10, 1^{h} to 3^{h}.		Jan. 10, 4^{h} to 5^{h}.		Jan. 11, 11^{h} to 12^{h}.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	50.8	49.9	----	09.5	----	47.8	----	----	----	15.7	42.7	45.7	----	36.3	16.2	----
.029	----	51.4	10.5	----	49.2	50.3	----	----	----	----	43.7	47.0	37.1	----	----	17.1
.028	----	----	----	----	51.3	53.0	----	----	----	17.3	44.8	48.4	----	----	18.0	----
.027	53.9	----	----	11.8	54.0	55.5	----	----	----	----	46.1	49.8	----	38.0	----	18.8
.026	----	----	13.3	----	57.0	58.2	----	----	16.7	18.8	47.8	51.0	38.7	----	19.8	----
.025	----	54.9	----	13.5	59.5	01.0	----	----	----	----	49.0	----	----	39.2	----	20.9
.024	----	----	----	----	----	----	----	----	18.0	----	50.4	----	----	----	----	----
.023	----	----	----	----	05.8	07.0	----	----	----	----	----	----	----	----	----	----
.022	----	----	----	----	08.3	09.4	----	----	----	----	----	----	----	----	----	----
.021	----	----	----	----	11.2	12.8	----	----	----	----	----	----	----	----	----	----
.020	01.5	----	----	----	15.6	17.3	----	----	----	----	57.0	01.5	----	----	26.9	----
.019	03.2	02.3	21.5	----	19.9	22.6	----	----	----	----	58.8	03.8	----	----	----	28.5
.018	05.3	04.5	22.8	22.1	25.7	27.2	----	----	----	28.7	00.8	06.5	----	44.5	30.0	30.5
.017	07.8	06.3	24.9	24.0	29.7	31.3	----	----	----	30.6	02.9	09.4	45.7	----	31.8	32.5
.016	09.8	08.5	26.7	25.8	34.6	37.4	----	----	----	32.8	05.8	12.2	----	46.5	33.7	34.4
.015	11.9	10.5	28.8	27.9	39.7	43.5	----	----	29.7	35.3	08.5	15.2	47.6	----	35.8	36.5
.014	13.8	12.5	30.9	29.9	45.7	49.2	11.6	----	31.7	37.6	11.4	18.6	----	48.4	37.9	38.6
.013	16.1	14.4	33.1	32.0	52.6	56.2	----	12.8	34.0	40.3	14.4	23.3	49.4	----	40.3	41.1
.012	18.6	16.7	35.9	34.7	58.9	03.9	14.1	----	36.2	43.0	17.7	26.9	----	50.2	42.6	43.5
.011	21.8	19.3	39.0	37.7	07.9	13.0	----	15.7	38.5	46.2	22.1	32.5	51.7	----	45.7	46.6
.010	25.3	22.7	42.1	40.7	16.8	23.0	17.1	----	41.0	50.2	25.5	38.4	53.1	52.7	48.9	50.0
.009	29.4	26.2	45.8	44.0	27.1	34.1	----	19.1	43.8	55.1	29.8	45.9	54.5	54.2	52.8	53.8
.008	34.3	30.1	49.7	47.6	38.5	45.9	21.6	----	47.4	00.4	34.9	56.3	55.9	55.6	56.5	57.8
.007	39.2	35.1	54.2	51.7	50.7	59.7	----	23.7	51.9	06.0	41.8	08.3	57.2	56.8	01.6	02.7
.006	44.9	40.2	59.7	57.1	05.5	14.8	26.9	28.2	56.6	13.0	50.7	24.9	58.7	58.4	06.6	08.4
.005	50.7	45.8	----	04.2	22.9	36.0	31.2	----	01.8	----	01.7	----	00.4	00.0	12.5	----
.004	----	----	----	----	----	----	37.2	----	----	----	16.0	----	----	----	19.0	----
.003	----	----	----	19.9	----	----	----	----	----	----	32.7	----	05.2	----	----	----

Pendulum at Fort Conger. Arc observations. Times of reaching successive thousandths of radius on each side—Continued.

Swing and face	17 *B*		18 *B*		19 *B*		20 *B*		21 *B*		22 *B*		23 *F*		24 *F*	
Date	Jan. 11, 12^h to 3^h.		Jan. 11, 4^h to 5^h.		Jan. 13, 12^h to 1^h.		Jan. 13, 1^h to 4^h.		Jan. 13, 5^h to 6^h.		Jan. 17, 12^h to 1^h.		Jan. 17, 2^h to 4^h.		Jan. 17, 5^h to 6^h.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	48.2	49.7	05.8	----	----	19.3	52.3	----	21.5	----	----	----	----	02.9	----	15.2
.029	50.5	52.0	----	----	----	----	----	54.3	----	22.4	----	----	04.0	05.3	----	----
.028	52.9	54.3	07.7	06.8	20.4	21.0	56.6	----	23.1	----	----	----	06.6	07.8	----	16.9
.027	55.4	57.0	----	----	21.3	22.0	----	58.8	----	24.3	----	----	08.8	10.4	----	----
.026	58.1	00.1	09.8	08.7	----	----	01.5	----	24.8	----	----	----	11.6	13.0	17.7	18.8
.025	00.8	----	10.7	----	23.1	----	----	04.1	----	26.3	38.0	----	14.6	16.1	----	20.0
.024	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
.023	06.7	09.9	----	----	----	----	----	10.8	----	----	----	----	21.7	23.5	----	----
.022	10.6	13.5	----	----	----	----	14.2	----	----	----	----	----	25.0	26.8	----	----
.021	14.4	17.3	15.8	----	----	----	----	18.3	----	----	----	----	28.5	30.7	----	----
.020	18.3	21.9	17.3	16.2	----	----	21.8	----	31.7	32.6	44.0	----	32.6	34.8	----	----
.019	22.8	26.5	18.6	17.5	30.5	31.6	----	26.5	33.3	34.1	46.0	44.9	36.8	38.8	26.4	28.1
.018	27.2	31.7	20.6	19.2	32.2	33.4	30.8	----	34.7	35.7	----	46.9	41.0	43.2	----	----
.017	32.7	37.9	22.6	21.0	34.0	35.2	----	35.9	36.3	37.4	50.3	----	45.6	48.0	29.6	32.4
.016	38.8	43.0	24.5	22.8	35.7	37.2	41.0	----	38.2	39.2	----	----	50.6	53.1	----	----
.015	43.9	49.0	26.5	24.9	37.6	39.2	----	46.5	40.2	41.2	54.3	52.0	56.0	58.8	33.8	36.3
.014	49.7	56.3	29.0	27.0	39.9	41.7	52.2	----	42.2	43.5	56.3	54.5	01.9	04.9	----	----
.013	57.3	03.3	31.4	29.2	42.5	44.2	----	00.3	44.4	46.1	58.5	56.6	08.2	11.5	38.6	41.0
.012	04.0	11.2	34.2	32.0	45.1	47.3	09.0	----	47.1	48.6	01.3	59.0	16.8	20.0	----	----
.011	11.8	20.5	37.7	35.2	48.0	50.5	----	17.9	50.0	51.2	04.9	01.9	25.5	28.6	43.8	46.7
.010	21.7	30.8	41.3	38.4	51.0	53.6	27.1	----	53.1	54.3	08.3	05.3	35.0	38.0	----	----
.009	31.5	41.9	44.9	42.2	54.2	57.3	----	37.2	56.8	57.8	12.7	08.8	45.5	50.5	51.1	54.3
.008	42.7	55.0	49.0	46.3	58.3	02.5	47.5	----	00.3	02.0	17.2	13.3	57.2	03.1	----	----
.007	56.6	08.8	54.0	50.5	03.1	07.2	----	03.0	04.2	07.3	22.5	17.9	08.8	15.5	59.4	04.5
.006	09.5	23.0	59.9	56.0	08.0	13.6	15.6	----	09.3	12.6	28.0	23.0	22.2	32.0	----	----
.005	23.6	40.0	----	02.3	14.3	20.7	----	36.0	15.0	----	34.4	28.7	39.5	53.4	10.8	17.3
.004	----	----	----	09.3	----	----	53.7	----	21.2	----	----	----	----	----	----	----
.003	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Swing and face	25 *B*		26 *F*		27 *F*		28 *F*		29 *F*		30 *B*		31 *B*		32 *B*	
Date	Jan. 18, 1^h to 2^h.		Jan. 18, 2^h to 5^h.		Jan. 18, 6^h to 7^h.		Jan. 19, 12^h to 1^h.		Jan. 19, 2^h to 5^h.		Jan. 19, 5^h to 6^h.		Jan. 20, 12^h to 1^h.		Jan. 20, 2^h to 4^h.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	02.8	----	32.3	----	09.3	10.2	36.5	36.9	04.5	----	50.5	----	34.6	35.5	02.5	05.6
.029	----	04.2	----	----	----	----	37.4	37.8	----	07.0	----	51.6	----	----	----	----
.028	----	----	36.7	34.6	11.2	12.0	----	----	09.6	----	52.2	----	36.5	37.2	07.3	10.4
.027	05.5	06.5	----	----	----	----	38.9	39.6	----	11.9	----	53.2	----	----	----	----
.026	----	----	41.5	39.1	13.2	14.2	40.1	40.6	14.7	----	54.0	----	38.1	39.0	12.9	----
.925	07.6	----	44.1	----	----	15.2	----	41.4	----	17.0	----	55.2	----	40.0	15.5	----
.024	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
.023	----	----	----	----	----	----	----	----	23.0	----	----	----	----	----	----	----
.022	----	----	----	----	----	----	----	----	----	27.2	----	----	----	----	24.6	29.5
.021	----	----	57.1	53.0	----	----	----	45.1	32.0	----	----	----	----	----	----	----
.020	----	14.5	----	----	20.4	21.8	----	----	----	36.0	01.0	----	----	----	32.1	37.7
.019	15.2	16.2	05.2	01.3	----	----	47.6	48.7	40.3	----	----	03.0	46.5	47.9	----	----
.018	16.7	17.8	----	----	23.4	25.0	49.1	50.6	----	44.7	04.5	----	----	----	39.9	47.0
.017	18.3	19.6	14.9	10.4	----	----	51.0	52.3	49.2	----	----	06.6	49.5	51.3	----	----
.016	20.0	21.5	----	----	26.8	29.1	52.6	54.1	----	54.3	08.4	----	----	----	49.8	58.1
.015	22.0	23.6	25.7	20.9	----	----	54.4	56.2	59.0	----	----	10.7	53.2	55.3	----	----
.014	24.3	25.8	----	----	31.1	33.6	56.5	58.3	----	06.4	12.5	----	----	----	01.0	11.2
.013	26.7	28.3	39.7	33.1	----	----	58.6	00.7	12.5	----	----	15.2	57.7	00.1	----	----
.012	29.6	31.1	----	----	36.1	39.1	01.1	03.6	----	21.5	17.2	----	00.4	02.8	14.6	26.6
.011	32.7	34.2	56.0	49.8	----	----	04.0	06.6	30.1	----	----	21.0	03.2	05.8	----	----
.010	35.7	38.0	----	----	42.1	45.5	06.9	09.8	----	39.3	23.5	----	06.3	09.3	29.9	43.4
.009	39.3	42.0	18.1	07.9	----	----	10.2	13.7	50.2	----	----	27.7	09.7	13.0	----	----
.008	43.2	46.2	----	----	50.0	54.3	14.0	17.8	----	00.0	31.2	----	13.4	17.2	48.0	10.0
.007	47.4	51.0	43.5	31.5	----	----	18.5	22.9	13.9	----	----	36.0	17.7	22.3	----	----
.006	52.4	56.8	02.1	45.3	00.1	----	23.3	28.7	----	30.7	40.9	----	22.8	28.1	15.1	43.0
.005	58.6	03.5	23.2	04.0	06.1	12.5	29.2	35.5	48.9	----	----	47.5	29.2	35.0	33.1	03.5
.004	----	----	----	----	----	----	----	----	----	10.6	53.7	----	----	----	----	----
.003	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Pendulum at Fort Conger. Arc observations. Times of reaching successive thousandths of radius on each side—Continued.

Swing and face	33 *B*		34 *B*		35 *F*		36 *B*		37 *B*		38 *B*		39 *B*		40 *B*	
Date	Jan. 20, 5h to 6h.		Jan. 21, 12h to 1h.		Jan. 21, 2h to 5h.		Jan. 21, 5h to 6h.		Jan. 23, 2h to 3h.		Jan. 23, 4h to 7h.		Jan. 23, 7h to 8h.		Jan. 25, 1h to 2h.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	26.2		32.5	----	14.5	----	----	20.8	27.8	28.8	----	08.6	----	56.0	----	----
.029		----	----	33.3	----	18.3	----	21.7	----	----	09.4	10.6	----	----	32.1	----
.028	----	26.7	34.2	----	19.4	----	----	----	29.5	----	11.6	13.1	----	58.0	----	32.8
.027	29.0	27.5	----	35.2	----	23.0	----	----	30.3	31.7	14.3	15.8	57.3	----	33.8	----
.026	----	----	36.0	----	24.6	----	----	24.9	----	----	17.2	19.1	----	----	----	34.6
.025	----	29.5	----	37.0	----	28.8	24.2	----	32.2	----	20.5	22.0	59.3	00.9	35.7	----
.024	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
.023	----	----	----	----	----	----	----	----	----	----	----	29.4	----	----	----	----
.022	----	----	----	----	----	39.3	----	----	----	----	30.3	33.0	----	----	----	----
.021	----	----	----	----	41.3	----	----	31.4	----	----	34.1	36.6	----	----	----	----
.020	37.9	35.7	42.9	----	----	47.5	----	----	38.5	40.2	37.9	41.0	----	07.9	----	41.4
.019	39.7	----	----	44.4	49.5	----	----	34.4	----	----	42.2	46.6	[illegible]	09.4	42.8	----
.018	41.4	38.7	45.8	----	----	56.0	30.5	----	41.4	43.8	47.7	51.7	08.7	11.5	----	44.1
.017	43.3	40.4	----	47.8	58.1	----	----	38.5	----	----	53.0	57.6	10.8	13.3	45.5	----
.016	45.3	42.3	49.7	----	----	07.5	33.5	----	45.2	48.1	59.0	03.8	12.6	15.5	----	47.8
.015	47.6	44.3	----	51.8	10.0	----	----	43.2	----	----	05.3	09.9	14.6	17.7	49.5	----
.014	49.9	46.4	53.6	----	----	19.6	37.5	----	49.3	52.4	11.4	16.0	16.7	20.3	----	52.0
.013	52.5	48.7	----	56.3	22.3	----	----	48.2	----	----	18.0	23.3	19.2	22.6	54.1	----
.012	55.3	51.3	58.3	----	----	34.0	42.0	----	53.9	58.0	25.0	30.8	21.5	25.4	----	56.8
.011	58.9	54.2	----	01.3	36.9	----	----	54.5	----	----	34.0	39.9	24.0	28.6	59.7	----
.010	02.6	57.3	04.7	----	----	51.9	47.3	58.3	59.7	05.1	43.1	50.5	27.3	32.6	----	02.7
.009	06.9	00.9	----	08.6	56.1	----	----	03.0	----	----	52.6	02.5	31.1	36.9	06.4	----
.008	11.4	04.3	12.0	----	----	16.5	53.0	08.2	07.3	14.0	05.1	14.3	35.1	41.8	----	10.6
.007	16.8	08.6	----	16.7	21.5	----	56.5	----	----	19.7	16.8	29.0	39.6	46.6	15.0	----
.006	----	14.0	21.9	----	----	45.9	00.6	19.7	16.7	----	31.6	44.9	44.4	52.9	----	20.3
.005	----	19.8	----	28.1	51.1	00.7	05.7	----	23.2	32.8	48.3	05.2	50.0	----	26.0	----
.004	----	25.9	35.2	----	----	----	10.9	----	----	----	----	----	57.4	----	----	----
.003	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Swing and face	41 *F*		42 *F*		43 *F*		44 *F*		45 *F*		46 *F*		47 *B*		48 (?)	
Date	Jan. 25, 2h to 5h.		Jan. 25, 5h to 6h.		Jan. 26, 1h to 2h.		Jan. 26, 2h to 5h.		Jan. 26, 5h to 6h.		Jan. 29, 1h to 2h.		Jan. 29, 2h to 5h.		Jan. 29, 5h to 6h.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
	m.	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*m.*
.030	----	58.4	50.6	----	04.8	----	35.1	----	40.3	----	----	21.4	55 7	----	46.3	----
.029	01.3	----	----	51.4	----	06.1	----	39.5	----	41.8	22.5	----	----	57.5	----	47.2
.028	----	03.2	52.2	----	06.5	----	40.0	----	----	42.7	----	----	59.4	----	48.1	----
.027	06.7	----	----	53.2	----	07.7	41.8	44.5	----	----	----	24.0	----	01.0	----	49.1
.026	----	08.4	54.2	----	07.1	----	44.9	46.8	43.7	44.6	25.2	----	03.6	----	50.1	----
.025	12.6	----	----	55.2	----	09.4	47.3	49.8	----	45.8	----	26.0	----	05.4	----	51.2
.024	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
.023	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
.022	----	20.7	----	----	----	----	57.0	00.7	----	----	----	----	----	----	----	----
.021	26.0	----	----	----	----	----	01.3	04.5	----	----	----	----	----	----	----	56.4
.020	30.1	28.8	01.4	----	----	16.1	05.2	08.5	----	----	----	----	20.0	----	57.7	----
.019	34.0	32.3	----	02.9	16.5	----	09.1	12.7	52.1	53.7	34.6	----	----	23.5	----	59.1
.018	38.8	36.2	04.6	----	----	19.2	13.2	16.8	----	----	36.3	35.7	27.9	----	00.9	----
.017	44.0	41.6	----	06.4	19.5	20.8	17.3	21.7	55.3	57.3	----	37.6	----	32.7	----	03.0
.016	48.9	46.5	08.2	----	21.4	22.7	22.4	27.7	----	----	40.0	----	37.4	----	04.6	----
.015	54.0	52.3	----	10.8	23.3	24.9	28.6	34.0	59.0	01.0	----	41.6	----	43.5	----	07.1
.014	59.7	57.9	12.9	----	25.3	27.1	35.0	40.8	----	----	44.4	----	49.5	----	09.0	----
.013	05.7	03.8	----	15.5	27.7	29.5	42.0	48.5	03.3	05.6	46.8	46.2	----	55.4	----	12.0
.012	11.8	09.8	18.1	----	30.2	32.3	49.5	56.3	----	----	49.9	49.3	01.5	----	14.6	----
.011	19.3	16.9	----	21.1	33.2	35.2	57.2	04.7	08.8	11.6	53.1	52.0	----	10.2	----	17.5
.010	27.6	24.8	24.2	----	36.1	38.5	05.6	13.5	----	----	56.3	55.2	19.3	----	20.8	----
.009	37.0	33.5	----	28.2	39.4	42.0	14.6	24.1	15.0	18.6	00.2	59.0	----	30.1	----	24.7
.008	47.4	43.5	31.6	----	43.0	46.5	25.7	35.7	----	----	04.7	03.6	40.1	----	28.7	----
.007	59.9	56.0	----	37.5	47.6	51.0	38.2	49.6	23.3	27.8	09.2	07.9	----	52.2	----	33.5
.006	13.6	08.7	41.3	----	52.6	56.2	52.4	04.9	----	----	15.3	13.4	09.2	----	38.4	----
.005	30.3	24.3	----	48.8	57.9	03.2	07.5	22.5	33.5	41.2	----	19.3	29.8	25.8	----	45.5
.004	----	----	----	----	----	----	----	----	----	----	----	27.7	----	----	52.0	----
.003	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Correction for arc. Table of mean t_∞ and corrected b^{-1}.

Swing.	Approx. b^{-1}	t_∞ for $\phi =$				t_∞ wt. mean.	Corr. b^{-1}	t_∞ for $\phi =$				t_∞ adopted.
		.0280	.0148	.0084	.0050			.0280	.0148	.0084	.0050	
	m.	*h. m.*	*m.*	*m.*	*m.*	*m.*	*m.*	*h. m.*	*m.*	*m.*	*m.*	*m.*
1	39	10 53.3+	52.4+	51.7	50.0	52.7+	37.0	10 55.5	55.6	55.8	55.0	55.6
2	112	11 58.2	57.3	56.8	56.0	57.6+	110.3	12 0.1	0.0	0.3	0.2	0.1
3	39	4 42.0+	41.8+	42.0+	41.4	41.9+	38.7	4 42.4	42.3	42.7	42.1	42.4
4	39	9 39.1	37.8+	37.1+	35.8+	38.3	36.6	9 41.7	41.6	42.0	41.9	41.7
5	112	10 18.7+	18.2	19.0	15.1+	18.4+	111.1	10 19.7	19.6	20.8	17.4	19.7
6	39	3 26.0	25.4	26.3+	26.0	25.7	38.6	3 26.4	26.0	27.0	27.0	26.3
7	39	9 19.8	19.2	19.3+	19.5	19.4+	38.3	9 20.6	20.3	20.8	21.2	20.5
8	112	9 44.9+	46.1+	48.7	46.6+	45.8+	114.9	9 41.8	41.8	42.8	39.4	41.8
9	39	2 9.4+	10.1	10.6+	10.9	9.8+	40.3	2 8.0	8.1	8.0	7.6	8.0
10	39	9 28.2+	27.6	27.6+	27.3	27.9	38.1	9 29.2	29.0	29.5	29.5	29.1
11	112	9 49.0	47.4+	49.0	48.9+	48.2	110.7	9 50.4	49.5	51.6	52.2	50.1
12	39	1	69.6	61.2	53.9+	68.2+	21.5	2	37.0	36.8	37.7	37.0
13	39	11 33.5	31.9	32.5+	33.9+	32.6+	37.3	11 35.4	34.6	36.0	38.2	35.1
14	112	10 103.6	77.0+	54.4+	41.8	86.1	59.3	12 41.6	39.6	41.6	53.5	40.7
15	39	3 54.6+	46.4+	35.7	22.6+	48.8	19.3	4 16.3	17.3	15.8	11.9	16.7
16	39	10 35.1	35.4+	36.0+	36.1+	35.3+	39.9	10 34.1	34.0	34.2	33.9	34.1
17	112	10 50.6	52.2+	55.5+	51.8+	51.8	115.7	10 46.5	46.5	48.0	42.6	46.6
18	39	3 24.4+	25.1	26.3+	26.8	24.9+	40.7	3 22.6	22.4	22.9	22.6	22.5
19	39	11 37.8+	37.9+	39.0	39.8+	38.0	39.9	11 36.9	36.5	37.2	37.6	36.7
20	112	11 53.3+	52.9+	55.2+	54.3	53.3	112.6	11 52.7	52.0	54.0	52.8	52.4
21	39	4 40.3+	40.1	40.1	39.3+	40.2	38.5	4 40.9	40.9	41.1	40.6	40.9
22	39	11	52.4+	53.8+	54.1	52.6+	41.5	11	48.5	48.8	47.8	48.5
23	112	0 3.9+	3.7	6.2+	5.9	4.0	113.1	0 2.7	2.0	4.0	3.2	2.4
24	39	4 33.5	34.4	35.7	36.4+	34.1+	41.1	4 31.2	31.1	31.4	31.2	31.2
25	39	0 22.1	22.3	23.4+	23.4+	22.3	39.9	0 21.1	20.9	21.6	21.2	21.0
26	112	0 32.5	29.6	31.2+	33.3	30.9+	109.1	0 35.7	34.1	37.1	42.6	35.1
27	39	5 28.8	29.5	30.8	31.7+	29.3+	40.9	5 26.7	26.5	26.9	27.0	26.6
28	39	11 55.5+	54.7	54.8+	54.8	55.0+	37.9	11 56.8	56.4	57.1	57.6	56.6
29	112	0 6.1	6.2	7.7+	8.5	6.3	113.1	0 4.9	4.5	5.5	5.7	4.8
30	39	5 9.4	9.8	10.2+	9.4+	9.6+	39.7	5 8.6	8.7	8.8	7.7	8.7
31	39	11 53.9	53.7+	54.2+	54.4+	53.8+	39.1	11 53.8	53.6	54.0	54.2	53.7
32	112	11 65.9	65.6	65.9	67.6	65.8	112.0	12 5.9	5.6	5.9	7.6	5.8
33	39	4 44.5	45.3	46.7+	47.4+	45.1	41.1	4 42.2	42.0	42.5	42.2	42.1
34	39	11 51.3+	50.9	51.1	50.4	51.1	38.4	11 52.0	51.8	52.3	51.9	51.9
35	112	0 16.8+	17.1+	18.8+	16.2	17.1+	113.0	0 15.7	15.6	16.8	13.7	15.7
36	39	4 39.1+	38.6+	39.3+	38.7+	38.9	38.6	4 39.6	39.3	40.2	39.7	39.5
37	39	1 47.2	48.0	49.3+	50.2+	47.8	41.0	1 45.0	44.9	45.3	45.2	45.0
38	112	2 9.5	13.1+	16.2+	16.4+	11.9	119.0	1 61.8	62.2	62.0	58.9	62.0
39	39	7 14.3	15.4+	17.0	17.7	15.1	41.6	7 11.4	11.4	11.7	11.2	11.4
40	39	0 50.0	49.0+	49.3+	48.7	49.4+	37.7	0 51.4	51.1	52.0	52.0	51.3
41	112	0 60.5	58.6+	53.2+	47.0	58.9	105.4	1 7.8	9.0	6.7	3.5	8.3
42	39	5 9.4	9.9+	10.9	10.7+	9.8	40.3	5 8.0	7.9	8.3	7.5	8.0
43	39	0 23.6+	23.5	23.6+	23.0	23.5+	38.8	0 23.9	23.8	24.1	23.5	23.9
44	112	0 37.6	37.4+	37.9+	35.2	37.5	111.7	0 37.9	37.9	38.6	36.0	37.9
45	39	4 59.5	59.4+	59.7+	59.7+	59.5	39.1	4 59.4	59.3	59.5	59.5	59.4
46	39	0 40.3+	41.3+	42.6	43.2+	41.0+	41.2	0 37.9	37.9	38.1	37.8	37.9
47	112	0 56.1	48.9+	47.4	47.4	51.7	100.9	1 8.3	6.3	10.0	15.2	7.5
48	39	5 5.3	6.3+	7.4+	7.4	6.0	41.1	5 3.0	3.1	3.2	2.1	3.0

PENDULUM, PEIRCE NO. 1.

Center of mass.

(H. Farquhar, observer, January 10, 1887.)

In middle.	Near light end.		In middle.	Near heavy end.		In middle.	Near heavy end.		In middle.	Near light end.	
	Number down.	Number up.		Number up.	Number down.		Number up.	Number down.		Number down.	Number up.
	0.753	0.753		0.453	0.428		0.438	0.445		0.717	0.722
	.739	.753		.444	.438		.450	.446		.724	.724
60.067	.752	.747	10.027	.436	.435	10.027	.446	.429	60.048	.726	.725
	.741	.752		.442	.435		.443	.443		.714	.724
− 0.749	.755	.750	− 0.440	.450	.438	− 0.442	.447	.432	− 0.723	.723	.725
59.318	0.748	0.751	9.587	0.445	0.435	9.585	0.445	0.439	59.325	0.721	0.724
Difference			49.731			Difference			49.740		

	cm.
Adopted mean $h_d - h_u$	49.736
Reduction to stop-meter at 68.3°	+ .018
$h_d - h_u$ in terms of stop-meter	49.754
$h_d + h_u$ in terms of stop-meter	100.074

$$\left\{ \begin{array}{l} h_d = 74.914 \text{ cm.} \\ h_u = 25.160 \text{ cm.} \end{array} \right.$$

These measures were made with edge 9 at light end and 10 at heavy end. The edges being interchanged the center of mass is moved by the ratio of the difference between the masses of 9 and 10 (found by Dr. Clark to be 0.6744^{gm}) to that of the pendulum, multiplied by the distance between the two edges in position, or $\frac{0.674}{10436} \times 101.8^{\mathrm{cm}} = 0.0066^{\mathrm{cm}}$, and with reference to the edges by the difference between the distances of the two from the center of figure, or 0.0167^{cm}, making a total change in h_d or h_u of 0.0233^{cm}. We have then, after change of edges

$$h_d = 74.914 + .023 = 74.937 \text{ cm.}$$
$$h_u = 25.160 - .023 = 25.137$$

INDEX.

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